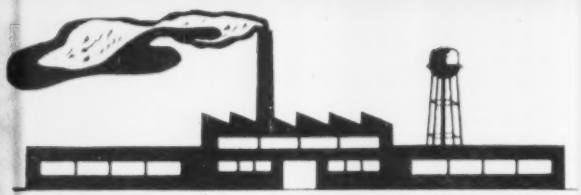
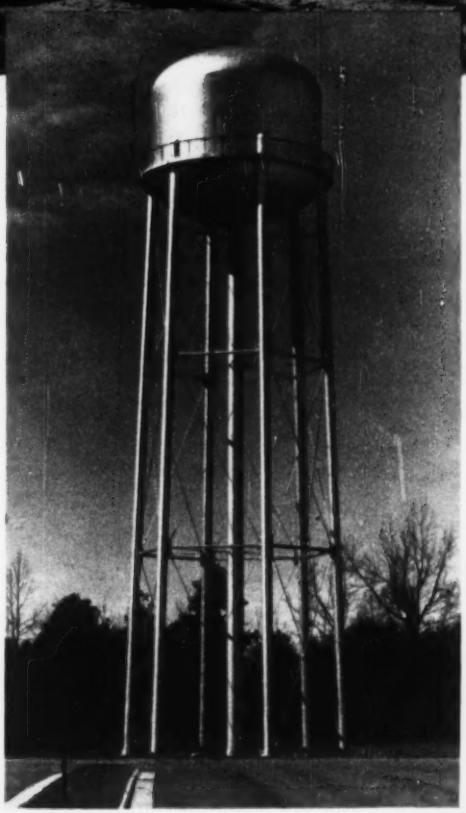
ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

WHY TAKE A CHANCE ON THIS?





GIVE YOUR PLANT THE PROTECTION IT NEEDS—A HORTON ELEVATED TANK

Water for fire protection is basic? But water has to have pressure to make it flow.

That's the thinking of plants, warehouses and schools throughout the country when they install Horton elevated water tanks. Installations are designed to provide sufficient water at adequate pressure to meet most situations. Any hour—night or day—water from a Horton elevated tank is ready to flow from hydrants or automatic sprinkler heads. It often means the difference between a small fire—or a disastrous conflagration.

In addition to greater protection, Horton elevated water tanks also mean savings on insurance premiums. Isn't that natural? Risk is reduced to a minimum!

Horton elevated water tanks with ellipsoidal bottoms are built in standard capacities from 15,000 to 500,000 gallons. Larger elevated tanks range up to 3,000,000 gallons.

When you improve your fire protection system—get the added protection of a Horton elevated water tank. Write our nearest office for details.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3	2125 Healey Building	Detroit, 26	1506 Lafayette Building	Salt Lake City, 4	512 West 17th South Street
Birmingham, 1	1520 North 50th Street	Houston, 2	2109 C & I Life Building	San Francisco, 4	1530—200 Bush Street
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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, Ont.

"We have never had a more satisfactory piece of equipment"

Polk Construction Company
GENERAL CONTRACTORS

February 19, 1951

Mr. Troy W. Saul, Jr.,
Sales Manager
Tenere Saul Machinery & Supply Co.
Box 1148
Orlando, Florida

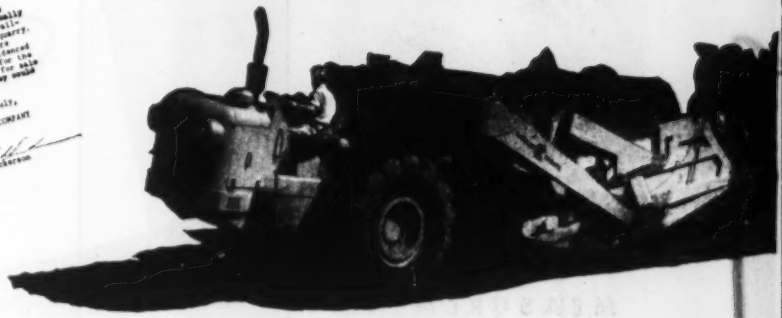
Dear Sir:

Your representative, Mr. Charles M. Nolen, has requested that we advise you concerning the service and the operation of our LaPlant Choate TS-300 Scrapers.

Since we have had these machines, we have moved several hundred thousand cubic yards of practically all classes of excavation on highway work, rail-road grading, and earthfill on our limerock quarry. We are glad to advise that we have never had a more satisfactory piece of equipment. This is evidenced by the fact that we have on file numerous inquiries for the above unit, that you have not offered under lease for sale to anyone and would not sell them unless they could be immediately replaced.

Yours very truly,
POLK CONSTRUCTION COMPANY
John C. Dickerson

LaPLANT-CHOATE MOTOR SCRAPERS



● LIKE the boys at Polk Construction Company —you want *satisfactory performance* from your earthmoving equipment.

What does "satisfaction" mean?

It means the capacity to haul bigger payloads each trip . . . speeds that let you make more trips per hour. It means power to spare in the toughest going . . . power that's *useable* in the pit, on the haul road, on the fill. It means dependability . . . the ability to keep up the pace shift after shift.

In a word, *"satisfactory equipment" means LaPlant-Choate Motor Scrapers!*

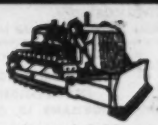
Your LPC distributor can give you facts and figures on Motor Scraper performance . . . see him before you bid on your next job. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa.

On this Polk Construction Co. job at Minneola, Florida for the State Road Dept., yardage ran over 300,000 cubic yards. Part of the job included clay stabilization work with hauls up to 5 miles one way. With heaping 14-yd. payloads, the Motor Scrapers made the 10 mile load-haul-spread cycle *at an average speed of 14 mph!*

LaPLANT C CHOATE

Cable-operated Scrapers in 6-, 8- and 14-yd. sizes for all makes of track-type tractors.

2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.


Hydraulic and Cable-operated Dozers.

WATER
MEASUREMENT
OR CONTROL

STEVENS

GRAPHIC, VISUAL OR
AUDIBLE REGISTRATION

Whether you need a simple staff gage, float gage or complex remote operated recorder, there is a STEVENS instrument to meet your requirements. Water level or flow recorders for weekly service or long periods of unattended operation, direct float operated or remotely controlled; indicators, controls for alarms and pumps... the STEVENS line is complete in the field of water measurement and control. We also welcome inquiries concerning special problems.

Pioneers in the field of water level recording for more than 43 years, LEUPOLD AND STEVENS INSTRUMENTS, INC., have developed and perfected precision water measuring instruments of all types to meet a variety of specific needs, especially for water works, sewerage, irrigation and industrial uses.

Write for literature and information on accurate and dependable STEVENS *water measuring instruments.*

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PORTLAND 13, ORE., U. S. A.

ENGINEERING NEWS-RECORD

Member

Volume 147 — DECEMBER 13, 1951 — No. 24

WALDO G. BOWMAN
Editor

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ROBERT F. BOGEL
Publisher

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1852 *1952*

100

Years Old Next Month

ONE HUNDRED YEARS AGO our company was founded in Chicago by Henry Warrington as a manufacturer of pile driving equipment and accessories.

The small factory on Milwaukee Ave. with its 20 employees survived and grew because it produced a better product.

Every business lasts and grows by serving. Through these one hundred years four generations of the Warrington family have served.

We have served our customers as specialists in the development and economical production of highly efficient construction equipment. As such specialists we have contributed our share through the years, to the evolution of the modern pile hammer and extractor.

One hundred years is a long time, both in the span of human lives, and of business. Every or any business which reaches that age owes its achievements not merely to sound management, but to people, forces and circumstances that have made such vitality and growth possible.

We have in mind at this milestone—

THE BLESSINGS—of the country in which we live. Only in America with its free enterprise, free economy, free society and the unmatched standards of living can there be industries like ours.

OUR CUSTOMERS—in the vast construction industry including over 100 distributors of construction equipment in the United States as well as many overseas representatives—and the customers of these distributors who are thousands of contractors that keep the vital system of construction rolling.

OUR EMPLOYEES—whose teamwork and harmonious relationships with management are outstanding.

OUR VENDORS—from whom we buy materials, machine tools, and the thousands of other things we need to operate our plant and produce for our customers.

THE COMMUNITY—in which our plant is located, that provides the workers we must have in times of peace and war.

To all of these we make humble acknowledgement on our one hundredth anniversary, and because of them we look with absolute confidence into the next century of our history.

VULCAN IRON WORKS

(INCORPORATED)

Pile Driving and Extracting Machinery

327 NORTH BELL AVENUE

CHICAGO 12, ILLINOIS

"EUCS" for

Powered by two 200 h.p. diesel engines, Model FFD "Eucs" haul 34 ton loads of earth and rock overburden at Monroe Mine of Oliver Iron Mining Co. in Minnesota.

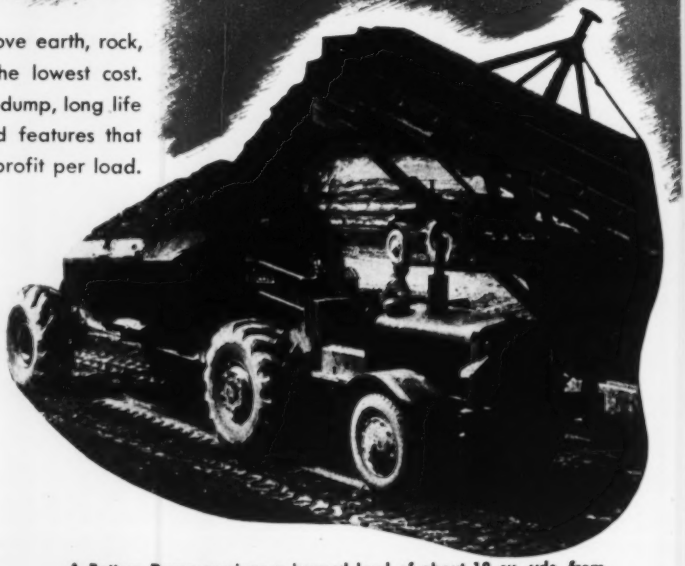
LOW COST HAULING ON TOUGH JOBS

Euclids are designed and built to move earth, rock, coal, ore and heavy excavation at the lowest cost. Large capacity, speed on the haul and dump, long life in heavy duty service, these are Euclid features that assure more loads per hour and more profit per load.

They haul big loads! Bottom-Dump Euclids have capacities of 13 to 25 cu. yds., Rear-Dump "Eucs" from 10 to 34 tons.

"Eucs" are fast! Top loaded speed of the Bottom-Dump is 34.4 m.p.h. Rear Dumps travel up to 36.3 m.p.h. with full payloads. They're powered by diesel engines from 125 to 400 h.p.

Whether you have a tough off-the-highway hauling job, or one where conditions are good, Euclids are your best bet for low cost hauling and long, dependable service.

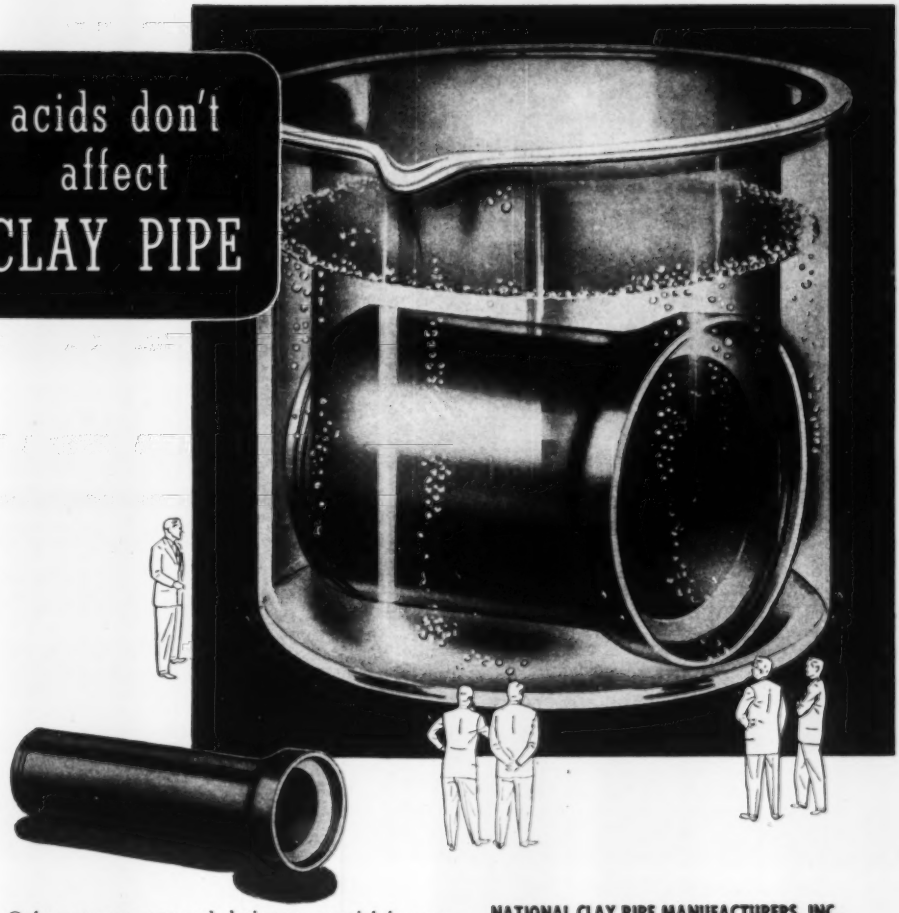


A Bottom-Dump receives a heaped load of about 18 cu. yds. from a Euclid Loader during construction of an access road to a Hydrogen Bomb Plant site in South Carolina. Contractor: R. B. Potashnick.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

CABLE ADDRESS: YUKLID—CODE: BENTLEY

acids don't affect CLAY PIPE



Only *one* sewerage and drainage material is completely safe from chemical attack—particularly in industrial areas, where factories discharge heavy concentrations of acids and alkalies. Clay Pipe won't corrode, decompose, or disintegrate, because it's *all pure material*, chemically inert, and strengthened by vitrification. It provides *complete* protection against chemical activity — tomorrow, or fifty years from now. Be sure to specify Vitrified Clay Pipe . . . the *only* pipe that never wears out.

NATIONAL CLAY PIPE MANUFACTURERS, INC.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
206 Connally Bldg., Atlanta 3, Ga.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

SPECIFY *Vitrified* **CLAY PIPE**

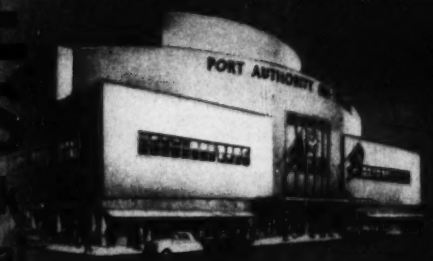
CLAY DIGS NEWER WEARS OUT

Seasons Greetings

AND MANY THANKS FOR YOUR CONTINUED FRIENDSHIP AND SUPPORT

. . . THE CLAY PIPE INDUSTRY

31 PEELLE MOTORSTAIRS
the gigantic New York Port Authority Bus Terminal



Among those affiliated with this tremendous project were: Howard S. Cullman, Chairman of the Board, Austin J. Tobin, Executive Director, and John M. Kyle, Chief Engineer and his staff, all of The Port of New York Authority; and Turner Construction Company, Builders.

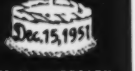
why **the world's largest moving stairway contract was awarded to Peelle**

In this greatest of all modern bus terminals, transportation *within* the building is an essential part of the structure's basic function. Moving stairways were planned to transport an estimated 130,000 passengers daily—24 hours a day—7 days a week—every day in the year. Breakdowns could not be tolerated.

Peelle Motorstairs were selected because their design is based on advanced operational concepts, resulting in longer life and reducing maintenance costs to the lowest level yet achieved in the moving stairway industry.

Peelle Motorstairs are operating smoothly, safely and economically all over the United States—in modern department stores, transportation terminals, municipal buildings and other well-planned structures.

For further details send for our new folder PM-500.



1ST ANNIVERSARY of Port Authority BUS TERMINAL

★

100 MILLION Motorstair Passenger Trips The First Year

"it's PEELLE *engineered*"

BETTER ENGINEERED PRODUCTS FOR MORE THAN 45 YEARS

PEELLE MOTORSTAIR

PEELLE MOTORSTAIR DIVISION
of **THE PEELLE COMPANY**
47 STEWART AVENUE, BROOKLYN 37, N. Y.
Offices in principal cities

PEELLE MOTORSTAIRS • FREIGHT ELEVATOR DOORS • DUMBWAITER DOORS • INDUSTRIAL DOORS

Specify Protection in Mobilization Construction

Industrial construction for mobilization will give longer, more dependable service if you specify the *protection* of Monsanto Penta for the lumber you employ.

Monsanto Penta (pentachlorophenol) protects against termites and other wood-boring insects and controls decay caused by fungi. Treated with properly formulated Monsanto Penta, wood can be painted or varnished.

Write for details on *how to specify* penta treatment for lumber . . . for names of companies that can supply material treated with Monsanto Penta . . . for firms able to custom-treat your lumber . . . for brands of formulations with which you can do your own treating effectively. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

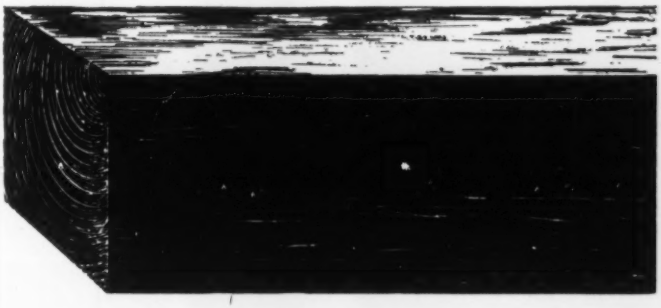
DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

Typical uses of penta-treated wood

Wherever wood is used, penta treatment will give it longer life. The following table gives the amount in pounds of 5% penta solution in oil that a cubic foot of wood should retain for maximum protection.

	Humidity average to low	Humidity average high
Sills and plates	6	8
Joists and girders	6	8
Screeds and subflooring	6	8
Factory flooring	6	8
Roof plank	6	8
Platforms and decking	6	8
Posts and fences	6	8
Cooling towers	..	8-10
Sign material	6	8
Millwork	6	8
Highway guardrails	6	8
Railway cars	6	8
Bridge timbers	8	10-12
Utility poles	8	8-10
Crossarms	6	8

Note: Higher treatments are recommended where wood is to serve under severe conditions, such as in the tropics. Recommendations will be furnished on request.



SERVING INDUSTRY . . . WHICH SERVES MANKIND

Up to 22 times more operations

WITHOUT RE-LUBRICATING

HOMESTEAD REISER

Self-Seald

LUBRICATED PLUG

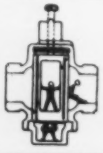
VALVES

TEST RECORD	
VALVE	NO. OF OPERATIONS Without RE-LUBRICATING
VALVE "A"	5
VALVE "B"	33
HOMESTEAD-REISER VALVE	110

Each valve assembled with the manufacturer's recommended lubricant. Test made on 75 lb. air pressure.

This comparative test of a Homestead-Reiser Valve and two other well-known lubricated plug valves showed that the Homestead-Reiser Valve remained drop-tight through twenty-two times more operations than Valve "A" without re-lubricating, and through three times as many operations as Valve "B". That means that Homestead-Reisers require less attention, and give greater economy of lubricant.

Prove the superiority of Homestead-Reiser Valves to your own satisfaction, by installing a few side by side with any other lubricated plug valve. They may be had in both semi-steel and cast-steel; sizes $\frac{1}{2}$" to 14"; FULL PORT or VENTURI TYPE for steam working pressures to 150 pounds, or oil-water-gas to 200 pounds.



"Self-Seald" MEANS . . . that in addition to a full lubricant seal around the ports, and around the top and bottom of the valve, the wedge-action of the divided plug under line pressure, causes the finely-finished surfaces of both segments of the plug to press outward against the sealing surfaces of the body. This self-sealing action keeps the plug surfaces in contact with the mirror-like bore of the body. The plug automatically adjusts itself for wear, thus assuring extra long life and maximum leakless service.

Write for new catalog 39-5

HOMESTEAD VALVE MANUFACTURING CO.

"Serving Since 1892"

P. O. Box 31 Coraopolis, Pa.

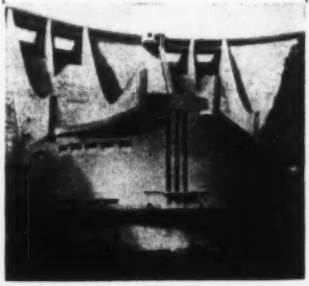
The Cover

If the character-full face on our cover picture, reproduced above, is unfamiliar to most Americans, the name that identifies it decidedly is not. For forty years past Andre Coyne of France has been designing notable dams—at last count, 52 of major proportions—whose fame and influence have been world-wide.

Leaving the U. S. last week after a two-month dam tour Mr. Coyne was generous in his praise of what he had seen and of the welcome he had received. Yet his hosts would be the first to admit their debt to his originality, and solidly design-based daring, too little of which can find reflection in U. S. practice.

Readers will see on p. 30 of this issue the story of one of Mr. Coyne's latest achievements, Europe's tallest dam, being built high in the Alps. They will recall the article (May 10, 1951 p. 28) "The French Touch in Dams," which was largely a reflection of Coyne contributions, and the announcement (July 5, 1951 p. 54) that the city of Bombay, India, was planning to have Mr. Coyne tie down its weakened water supply dam with huge tensioned cables as he had done for Chuerfas Dam in Algeria in 1935. Our cover picture shows Mr. Coyne beside one of his most notable creations, the ski-jump spillway on L'Aigle Dam, now duplicated on other French dams. Pictured there under construction, L'Aigle is shown completed at the bottom of this column, its spillways high above the powerhouse.

Mr. Coyne has received nearly every honor his own country can bestow, and his world-wide standing is emphasized by his presidency of the International Commission on Large Dams.



How to get

MORE WORK

from your "Cat" Motor Grader!

HERE'S the situation in a nutshell. The speed, versatility and big work capacity that have made "Caterpillar" Motor Graders an essential construction tool have also made them necessary to the defense effort. As military orders must be filled first, you may not be able to obtain prompt delivery of new machines. So it will pay you to plan *now* to get greater production and longer wear from your present equipment.

"Cat" Motor Graders are ruggedly built for long life. But good care on your part can lengthen that life span by thousands of extra service hours. Here's how:

1. Follow the recommended *operating* care in your Operator's Instruction Book. Read and reread it.
2. Observe the *maintenance* suggestions in the Operator's Instruction Book. They're down-to-earth – experience has proved them practical and effective.
3. Anticipate your future replacement parts needs by seeing your "Caterpillar" dealer about them *now*. Don't wait until wear gets beyond repair – many a part can be rebuilt *if* serviced in time.

You're in good hands when you work closely with your "Caterpillar" dealer. He is anxious to help you solve your problems. He has the skilled mechanics and service facilities to help you lick them and keep your equipme... in shape.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

You're the Doctor Preventive maintenance is good medicine for long life. Your Operator's Instruction Book is invaluable in the fight to conserve machine life. Follow the operation, lubrication and maintenance recommendations. When wear is evidenced in cutting edges, gears, tires or engine, see your "Caterpillar" dealer. He can help you prolong the life of your motor grader. Your motor grader is essential—don't abuse it!

Fast worker—reliable, tool This "Caterpillar" Diesel No. 12 Motor Grader is one of thousands that help construction men meet their contracts on schedule. An essential earthmoving tool, it stands up under tough going – handles easily. As a military tool, it's essential for airport construction and maintenance, road construction, the establishment of bases and scores of other jobs.

CATERPILLAR

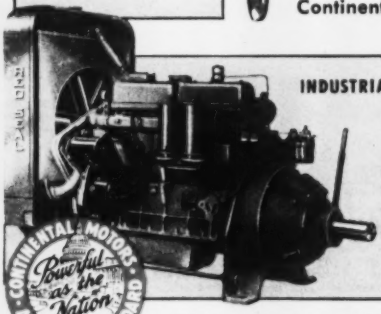
REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS

EARTHMOVING EQUIPMENT

THERE'S A CONTINENTAL RED SEAL MODEL ENGINEERED TO THE EXACT NEEDS OF VIRTUALLY EVERY INDUSTRIAL, CONSTRUCTION, TRANSPORTATION AND FARM JOB.

Fuel economy takes on new importance in these days of rising costs—and Continental Motors' 50 years of aggressive engineering has produced an expert matching of the factors on which economy depends. The more equipment you operate, the more you'll save by standardizing on makes that feature famous Continental Red Seal power.



INDUSTRIAL MODEL R-600 . . .

Open Power Unit. Six cylinder, overhead valve design. 65 to 110 shaft horsepower for continuous duty—75 to 140 shaft horsepower for intermittent duty. This Continental Red Seal model also available as closed power unit with sturdy sheet metal house with detachable sides.

FACTORY-AUTHORIZED SERVICE AND GENUINE CONTINENTAL RED SEAL PARTS AVAILABLE FROM COAST TO COAST

Continental Motors Corporation
MUSKEGON, MICHIGAN

READER COMMENT

What about Piqua?

Sir: I was very interested in reading in the October 11 issue of Engineering News-Record the account of the Laboon process of sludge handling.

Practically this same method of sludge handling has been practiced at the sewage treatment plant in Piqua, Ohio, for over 10 years. This sewage plant was designed by Hoover, Montgomery and Alton and was constructed in 1939. Vacuum filters were installed for sludge treatment and incineration was provided for the sludge cake. However, the vacuum filters were not used after it was found possible to incinerate the raw sludge. The raw sludge is held in a concentration tank for a period of about a week, and the sludge comes to the top as is described in your article. Bucket elevators then carry the sludge to a screw conveyor which moves the sludge into a multihearth incinerator. The solids content of the sludge averages approximately 15%.

I discussed this process at a meeting of the Ohio Sewage Conference in Cleveland in the summer of 1949, when I was city engineer of Piqua.

I am not finding fault with Mr. Laboon's use of this process, but I do not believe that he should claim to be the originator as the sewage plant personnel in Piqua has used this method of sludge disposal for over ten years.

LEO LOUIS
Superintendent, City Water Works
Cedar Rapids, Iowa

What about Piqua?

Sir: In the paper on the development of a process of raw sludge concentration which I presented to the Federation of Sewage and Industrial Wastes Associations in St. Paul in October, I gave recognition to the work done at both Ashland and Piqua, Ohio. I was attracted by the work Piqua and Ashland had done on sludge concentration and as the result, I decided to try to improve on the system.

After viewing both plants, I decided that the Ashland plant was producing higher concentrations and therefore decided to make a complete investigation including test runs of the plant. Subsequently, I wrote an article on our findings at Ashland which appeared in the February 1949 issue of Sewage Works Engineering.

The Pittsburgh sewage treatment plant now being designed by Metcalf & Eddy, under the supervision of this

(*Continued on page 14*)

Now! The Compact, Desk-Top OZAMATIC

GIVES YOU DIRECT COPIES AT *NEW LOW* COST!

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No Typing! No Writing!
No Gelatins, No Inks, No Muss!

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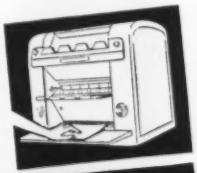

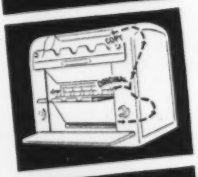

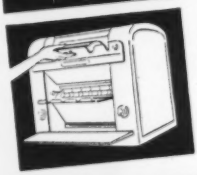

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This is vital these days—in view of delayed deliveries of new equipment, rising man power and material costs, and the need for continued operation without down time.

WHERE Wherever your job is, a phone call can bring you the services of your B-G distributor. See your classified phone directory or write direct to Barber-Greene Company, Aurora, Illinois, for the name and address of the B-G distributor nearest you.

WHAT Your B-G distributor has first call on large and complete factory—warehoused stocks of B-G parts and assemblies. His service organization has been trained at the factory. He has his own stocks of emergency parts. He offers you expert help—quickly—as well as continued assistance in keeping your B-G equipment properly maintained.

WHEN If you aren't already, get "maintenance-minded" *now*—before you've faced the costly actuality of idle man power and equipment due to preventable, foreseeable shutdowns. It's easy—just talk over your B-G equipment with your B-G distributor and set up a program of scheduled maintenance.

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Greenes...

CAN WORK LIKE NEW

KEEP THEM UP—TO KEEP COSTS DOWN

Many Barber-Greenes twenty years old—and older—are still performing at rated capacity day in, day out. Barber-Greenes are built to last. A minimum of inexpensive maintenance—on a regular schedule—will assure your continued success with the B-G equipment on your payroll.

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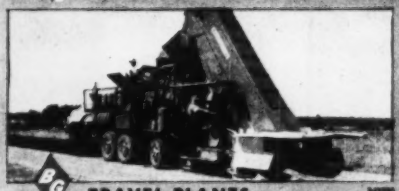

BG TRAVEL PLANTS

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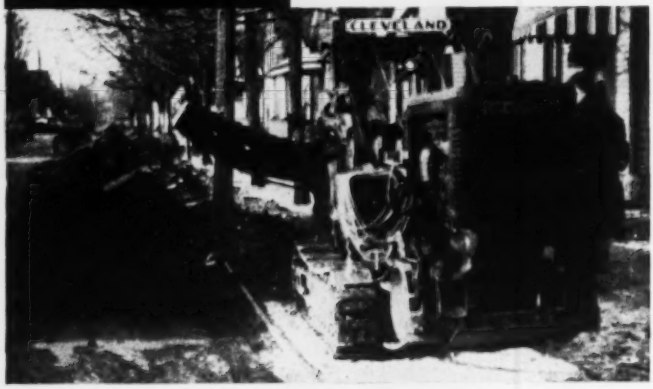
● ● ● ● OR WRITE BARBER-GREENE COMPANY, AURORA, ILLINOIS, U.S.A.

5 REASONS WHY CLEVELANDS DIG REAL PROFITS



Because CLEVELANDS dig faster—engineered higher capacity and bonus power back up your schedules, cut costs on your entire operation. Because CLEVELANDS are more versatile—compact design, hairline maneuverability and a wide range of trench sizes let them handle more different kinds of work in the tightest places. Because rugged CLEVELANDS put in more work-time—staying out of the repair shop, giving you a 12-month digging season, loading quickly for fast jumps between jobs. Because CLEVELANDS cost less to operate and maintain. And because CLEVELANDS deliver a longer working life, as proved by the high percentage of early models still in regular service. Get complete performance data and specifications today. The Cleveland Trencher Co., 20100 St. Clair Avenue, Cleveland 17, Ohio.

SEE YOUR LOCAL DISTRIBUTOR

CLEVELAND TRENCHERS

(Continued from page 10)

office, is the first plant which to my knowledge incorporates:

1. Preheating of raw sludge.
2. Maintenance of optimum temperatures in the concentration tanks.
3. Heating facilities for maintaining optimum sludge temperatures in each of the concentration tanks.
4. Mechanical equipment for homogenizing and removing concentrated sludge from the tank.
5. An arrangement of concentration tanks for exact timing so as to obtain optimum concentration. The Piqua and Ashland Installations consist of two tanks which are fed with daily increments of sludge until full whereas the Pittsburgh installation will consist of eight tanks, each of which will be sufficient for one day's maximum production of raw sludge.
6. Complete odor control including the removal of surface moisture and odors from the concentration tanks by mechanical means.
7. Heating and drying of surface of sludge by means of hot air.
8. A demonstrated type of pump which was used for the first time in Pittsburgh for removing highly concentrated sludge and pumping it directly to the incinerators with complete success.
9. Insulation of concentration tanks against heat losses.
10. Special arrangement of concentration tanks for treatment of subnatant liquors if necessary.

The Piqua and Ashland plants were designed and built initially for mechanical dewatering of sludge on vacuum filters and incineration of the cake and did not anticipate concentration and direct incineration of concentrated sludge without the requirement of mechanical dewatering. There is no intention on my part to take away any credit due Piqua and Ashland for their pioneering in this field. Had it not been for them I would not have proceeded with the further investigation and final development of what I believe is now a dependable and economical method of raw sludge concentration.

JOHN F. LABOON
Chairman
Allegheny County Sanitary Authority
Pittsburgh, Pa.

EDITOR'S NOTE—John F. Laboon does not claim to be the originator of sludge concentration. (The principle involved may be found described in more elementary sanitary engineering texts.) But he does claim a process which includes innovations of control and handling. For convenience, to distinguish it from other similar processes, ENR chose to label this one "The Laboon process."

Pneumapower

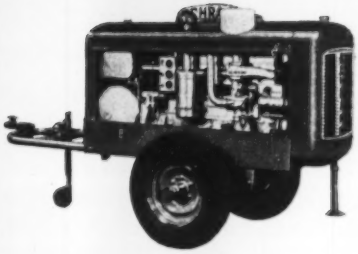
Air Compressor

compact

lightweight

low in cost

Pneuma-power (nu'ma-pou'er), *n.* 1. An air compressor that is compact, lightweight, low in cost, [illegible] mended for operating a heavy duty Rock Drill, or two heavy duty breakers, clay spades, trench diggers an[illegible]



Pneumapower 105... the most compact, lightweight 105 cu. ft. air compressor built. It is easily towed by car or truck and the skidded unit fits into one corner of your truck, leaving valuable space for other items . . . more practical than the cumbersome Power Take-Off type.

For full details write today for new Booklet SPB-51

Pneumapower 60 likewise offers weight saving and the same advantages as the 105, with an actual air capacity of 60 cu. ft.

Pneumapower 20 / ***Pneumapower 35*** — **Each a one** man outfit that can easily be moved about and provides air for Paint Spraying, Road Marking, Grease Guns, Driving Stakes, Tire Service Work, etc.

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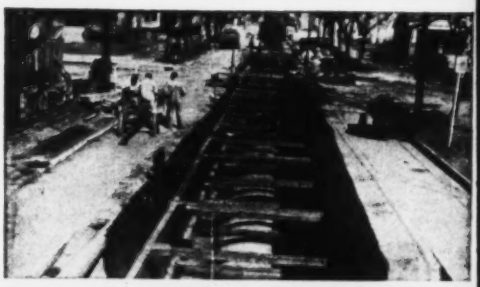
WEST CHESTER **PENNSYLVANIA**

SCHRAMM AIR COMPRESSORS

HERE'S ASPIRIN for construction headaches



Have you heard how Armco Steel Sheeting takes the headaches out of many construction jobs and saves money in the bargain?

Experienced contractors know that this durable sheeting has ample strength plus light weight and a small displacement area. It can generally be driven to full penetration without excavating. A power hammer does the job quickly and easily.

On temporary jobs, Armco Sheeting can be used again and again. A convenient hole near the top of each section facilitates pulling. The units nest together for convenient storage.

Armco Sheeting comes in flange and interlocking types for both temporary and permanent uses. It is a worksaving, cost-cutting tool for shoring trenches; building low retaining walls and cofferdams and many similar applications.

Write for complete information before bidding that next job. Armco Drainage & Metal Products, Inc., 4101 Curtis Street, Middletown, Ohio. Export: The Armco International Corporation.

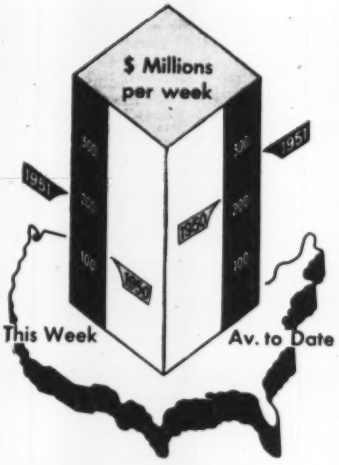
MORE SCRAP MEANS MORE STEEL . . . TURN YOURS IN TODAY!

ARMCO

ARMCO STEEL SHEETING

GOVERNMENTAL FEUD—Construction of a three-potline $46-million aluminum reduction plant at Kalispell, Mont., appeared so certain three weeks ago that Anaconda Copper Mining Co. and Harvey Machine Co. had development work in progress at the site. Today, who will build the plant is a question President Truman has indicated he will take a personal hand in settling. Twice within 90 days, Secretary of Interior Oscar Chapman has stopped Defense Production Administration projects for aluminum by playing his trump—control over power from Hungry Horse Dam. Now the name of Olin Industries has been introduced as a possible alternative to Anaconda-Harvey. But only Truman can break the deadlock between Chapman and the DPA.

LABOR MOVE—AFL hasn't given up on S.1973, a bill which would permit unions in the construction industry to make a union shop contract even before work has begun (ENR Nov. 1, p. 86). And the union contract could require membership in the union within seven days of hiring, instead of 30 days as now provided in Taft-Hartley. AFL President William Green has urged all AFL state and local councils to pressure their congressmen to support the amendment to the Taft-Hartley Law when Congress reconvenes next month. The November issue of the AFL Building and Construction Trades Dept.'s "Bulletin" is devoted entirely to a discussion of the bill and its importance to building trades workers and the industry. A major AFL move is under way at the present time and it carries plenty of weight.



LARGER LOAN YET—The Reconstruction Finance Corp., which last month approved a $57-million loan to Copper Range Co. to develop a big untapped copper deposit in northern Michigan, is now considering an even larger loan. Inside word is that Magma Copper Co. will get $75 million to further develop a copper deposit near Tucson, Ariz., where it has already spent $10 million. If approved, the project could yield 70,000 tons of refined copper yearly. If granted—as inside sources indicate it will soon be—the loan will be by far the largest made by the RFC organization since World War II.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr. Cost	Dec. '51	547.67	263.26	114.81
Bldg. Cost	Dec. '51	405.58	219.24	115.29
Volume	Nov. '51	404	164	117

Contracts by type of work

	This Week	Cumulative 50 wks 1951	Cumulative 50 wks 1950	% chge
Waterworks	$2.1	$201.1	$210.1	−4
Sewerage	7.9	322.3	282.3	+14
Bridges	5.2	308.4	357.9	−14
Highways	16.0	1,137.7	1,233.0	−8
Earthwork, Waterways	4.8	497.3	411.5	+21
Buildings:				
Public	26.2	2,012.3	1,865.2	+8
Housg., pub.	27.6	625.8	326.2	+92
Housg., priv.	39.1	1,965.5	3,052.0	−36
Commercial	4.1	588.0	946.7	−38
Industrial	40.6	4,044.6	1,620.3	+150
Unclassified	19.0	1,589.9	1,243.1	+28
Total	**$197.6**	**$13,292.9**	**$11,548.3**	**+15**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

IN THIS ISSUE—The debate over the value and effectiveness of controls continued hot with Manly Fleischmann making a strong case for control (p. 22), steel company executives take an opposite view of the situation (p. 24) . . . AEC, planning further expansion, pictured its own heavy impact on construction (p. 25) . . . With steel shortages likely to continue, Washington and the lumber industry got together to urge greater use of wood as a steel substitute (p. 146) . . . Highway officials weighed in with a plan to raise new federal-aid highway appropriations to $810 million (p. 27) . . . New York's water supply officials were dubious about the Hudson River as a source of drinking water (p. 28) . . . France pushed work on Tignes Dam, highest (592) in Europe (p. 30) . . . Statisticians found the upward trend of construction costs continues—but it's slower (p. 85) . . . The U.S. government took its first step toward enforcement of wage ceilings by bringing charges against mason contractors at Ann Arbor, Mich. (p. 83).

Only a

McKIERNAN·TERRY HAMMER

successfully drove these long piles

The contractor's problem? To drive 14" steel H beams, 60 to 130 feet in length, to refusal on this Veterans Hospital job in New York City. Here's the report of Mr. Herman C. Miller of the I. B. Miller Contracting Corporation:

"We had difficulty in driving these long lengths with other hammers. So we tried a McKiernan-Terry Single-Acting S-8 Hammer. Its performance was so successful that piles driven to refusal with other hammers in some instances went 20 feet deeper when re-driven with the S-8."

This powerful performance is typical of the entire line of McKiernan-Terry hammers. Find out how these hammers can help you handle the toughest pile-driving jobs. Bulletin contains complete data on 16 sizes of hammers and 2 sizes of extractors. Write for your copy.

A McKiernan-Terry Single-Acting S-8 Pile Hammer punching down long piles for the new Veterans Hospital, 23rd St. and First Ave., New York City, being constructed under the direction of the Corps of Engineers, New York District. Alfred Hopkins & Associates, Architects; Severud-Elstad-Krueger, Consulting Engineers.

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Plants: Harrison, N. J. and Dover, N. J.

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MK 312

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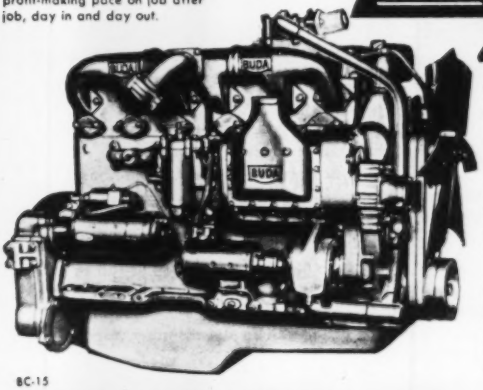
EXTRA POWER

of BUDA Diesels in More Pay Yards per Hour

Spencer Construction Co., Carrollton, Texas, using 3 TS-300 LaPlant-Choate Motor Scrapers powered by Buda Supercharged 844 Diesel engines for steady, slugging performance that sets a profit-making pace on job after job, day in and day out.

BIGGER PISTON DISPLACEMENT PAYS OFF IN...



BC-15

Larger Loads...Faster Trips!

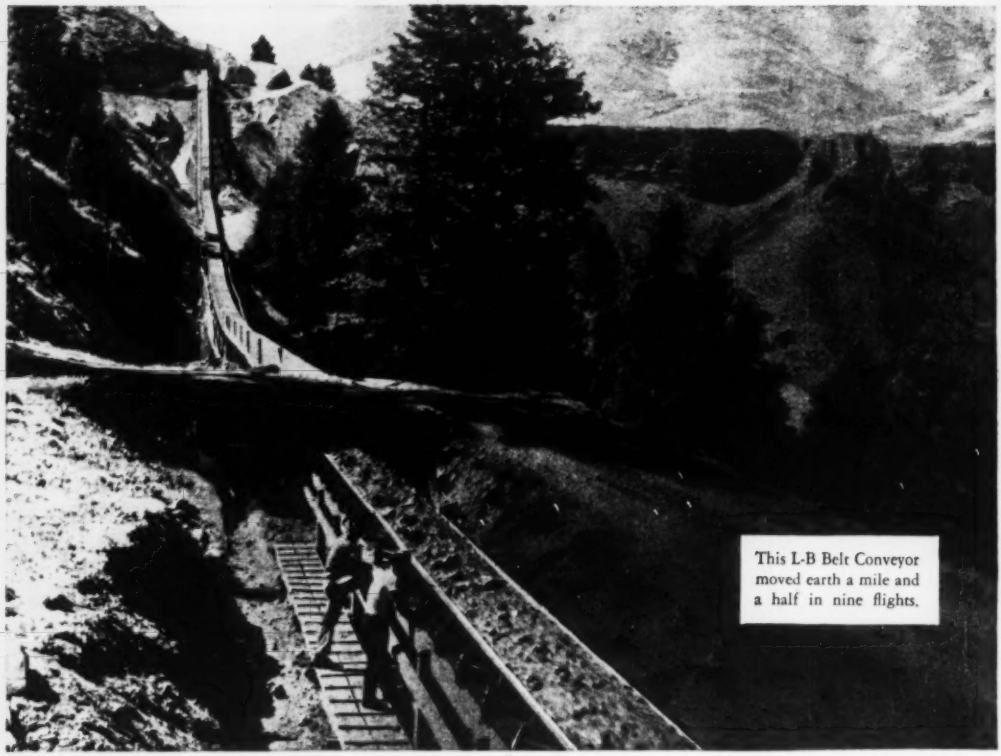
Operators all over the country are capitalizing on the extra power and greater lugging ability of Buda dyna-swirl Diesels. They can *see* the advantages that Buda Diesels' 12 to 18% more horsepower . . . 10 to 17% more torque give them in more pay yards every trip . . . every hour . . . every day.

These BIG Buda Diesels are your kind of engine—simple in design . . . easy on fuel and lube oil . . . require minimum maintenance and deliver 8000 or more hours of high performance operation between overhauls.

Your nearby Buda Distributor can prove Buda dyna-swirl Diesel advantages to you. Ask him today. Write for Bulletins and specifications today. The Buda Company, Harvey, Illinois

BUDA *a Power-Full and Dependable Name in Engines...*

Manufacturers of Diesel and Gasoline Engines, Maintenance of Way Products, Lifting Jacks, Earth Drills and Material Handling Equipment



This L-B Belt Conveyor moved earth a mile and a half in nine flights.

You can't drive down this highway!

But millions of tons of material ride these "highways of tomorrow" — Belt Conveyors engineered and built by LINK-BELT

More and more big projects are utilizing the silent, uncomplaining efficiency of the belt conveyor. Rising costs of other means of transportation have focused attention on the savings of conveyors. No right-of-way to carve out and maintain. No one-way-empty haul. No rehandling.

And, when it comes to conveying problems, experienced operators rely on Link-Belt. At no other single source is available such a vast pool of experience in materials handling and power transmission.

Link-Belt makes all belt conveyor components — your assurance that you get the right type and size of idlers, take-ups, pulleys, trippers, bearings and power transmission drives every time.

More — Link-Belt will design and build your supporting structures and enclosures . . . install the job completely. One source — one responsibility. Every detail receives the proper attention to assure you a trouble-free, long-life conveying system.

On any movement of earth and aggregate for construction projects, it will pay you to consult Link-Belt while you're still in the planning stage. Ask your nearest Link-Belt office.

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EDITORIALS

Invitation to tyrants

As if the hazards of construction contracting were not numerous and troublesome enough, now comes the U. S. Supreme Court with a decision that adds another and a mighty one. Henceforth, according to the highest law of the land, a contractor is completely at the mercy of the federal contracting official for whom he is working. There is no appeal from his decisions, unless fraud can be proved. The Court of Claims is placed beyond the contractor's reach, and declared ineligible to help him. Democracy thus dons the cloak of dictatorship.

If this seems strong language to apply to an action of the highest court of the land, it nevertheless finds support in the opinions of three dissenting justices, and particularly that of Justice William O. Douglas. Disregarding the enfeebling idea that consistency with earlier decisions is the highest expression of judicial stewardship (which was the motivation of the majority of the justices), Justice Douglas said that while the rule announced by the court could be rationalized in terms of contract law, it would have a "devastating effect." In his opinion, "It makes a tyrant out of every contracting officer. He is granted the power of a tyrant even though he is stubborn, perverse or captious. He is allowed the power of a tyrant though he is incompetent or negligent. He has the power of life and death over a private business even though his decision is grossly erroneous. Power granted is seldom neglected."

Here indeed is the crux of the matter. The court ruling is an invitation to tyrants, and competent and fair-minded government contracting officers and department heads should be as quick to reject it as contractors are to oppose it. The action of the Associated General Contractors in enlisting the aid of its members to secure legislation in the next session of Congress that would permit disputed questions to be taken to the Court of Claims was commendably prompt. Every Congressman who is against dictatorship and for democracy should declare in favor of such legislation. Otherwise this ruling of the Supreme Court will rack up a loss of one of the basic rights of democratic citizenship—the right of appeal for redress to an impartial judge.

In the meantime contractors dealing with the federal government do so at much greater risk than heretofore, and would be well advised to increase the contingency figures in their bids accordingly. This invitation to tyrants is also an invitation to higher construction costs. If one is accepted, both must be.

Advertising by engineers

In a special section of the New York Times for Sunday, Nov. 25, devoted to the New Jersey Turnpike, there appeared a dignified display advertisement carrying the names of six of the engineering firms that participated in the design and construction of that great project. It told of the advantages of the turnpike and expressed the pride of those firms for their share in the undertaking.

Two considerations made the advertisement conspicuous in addition to its prominent position: the fact that it bore the names of consulting firms whose names seldom if ever have appeared in advertising beyond the scope of a professional card; and—for those familiar with the engineering staff of the turnpike—the absence of the names of two firms that also participated prominently in the work.

One can surmise that an enterprising salesman for the Times proposed the ad to all eight firms. Two saw no reason to depart from the traditional stand of engineers against display advertising, even though there was nothing "self laudatory" in the copy that was laid before them. And possibly some of those who did permit their names to be included did so with reservations that were outweighed by unwillingness to upset a plan that others favored.

This advertisement brought some contrasting reactions and raises an interesting question. It was declared to be unethical by one engineer with the finality that is characteristic of many engineers when approaching issues that actually never have been fully covered by codes of ethics. (Advertising in "self laudatory language or in any other manner derogatory to the dignity of the profession" is all that is specifically covered by the code of the American Society of Civil Engineers.) Other engineers thought the ad was a step in the right direction, and expressed the opinion that it accorded fully with the letter and the spirit of the code of ethics.

The question relates to the reason why engineers so frequently feel they are denied public recognition for the services they render day in and day out in a modest and unassuming way. Perhaps the answer is in their failure to advertise their achievements and services more forcefully. The occasional appearance of the names of engineers and architects in advertisements, possibly with attractive pictures of structures they have designed, might go a long way toward developing the public recognition that is so ardently desired. And with no loss in dignity or standing—as the Turnpike ad demonstrated.

TELLS CMP STORY—Manly Fleischmann, administrator of the Defense Production Administration, gave his views to Senate subcommittee. (Dick Wolters photo.)

Is CMP best to gain defense goals? Senate group hears different views

WASHINGTON—A group of senators who wanted to know about the shortage of steel questioned some experts last week and got some unusually clear answers.

The Mobilization and Procurement Subcommittee of the Senate Small Business Committee heard a wide range of views from David F. Austin, executive vice president of U. S. Steel Co.; J. V. Honeycutt, assistant vice president of Bethlehem Steel Corp.; and Manly Fleischmann, administrator of the Defense Production Administration.

While none of these men completely agreed, one thing definite was accomplished: the different viewpoints are now more clearly defined. Both those who are for the Controlled Materials Plan and those against it have a better understanding of what is happening under the plan.

• **The case for CMP**—Mr. Fleischmann gave the group a carefully prepared statement which presented the case for the CMP completely illustrated with charts (see p. 23-24).

Basically, he sought to answer four often asked questions:

(1) Since the supply of steel has increased more since the Korean invasion than the steel requirements of our expanded military program, where has the extra steel gone and why?

(2) Why has the DPA failed to provide the full amount of steel requested for school and hospital construction, for public roads, and for other important programs?

(3) Is it true that requirements are over-stated and unrealistic?

(4) Why, in the judgment of the men who have been given responsibility for meeting the objectives of the mobilization program, has it been necessary to establish controls over distribution of steel and other materials?

• **Where is it going?**—In answer to the first question, Mr. Fleischmann used Chart No. 1 (p. 23), pointing out that in the year and a half since the invasion of Korea, the production of carbon steel has increased by about 3 million tons per quarter. Beyond this DPA has been able to save roughly an additional million and a half tons of carbon steel per quarter, he said, principally through cutting back on passenger automobiles, other consumers' durable goods and less essential construction.

"The chart shows what we have done with this extra four and a half million tons of carbon steel," he said. "About 1,800,000 tons are going into direct military production. This is the amount by which the allotment to the Department of Defense and the Atomic Energy Commission for the first quarter of 1952 exceeds the carbon steel used on a quarterly basis for comparable defense production and construction before the Korean invasion."

(Under CMP anticipated carbon steel supply was over-allotted by about 12% to take care of "attrition".)

Most of the balance, he says was distributed this way:

- About 660,000 more tons for industrial expansion programs to build new steel plants, aluminum plants, chemical plants and other facilities.
- About 140,000 more tons for construction of power generating and transmission facilities.
- About 1,450,000 more tons to make construction machinery, electrical equipment and other machinery and equipment.
- About 500,000 more tons to producers of components such as bearings, nuts, valves, etc.
- About 750,000 more tons to manufacturers of transportation equipment.
- About 425,000 more tons to producers of containers and packaging equipment.
- About 200,000 more tons for use overseas and in Canada.

"Let me again emphasize one point. I have been discussing only the increases in the carbon steel tonnage allotted to these major defense and related areas, over what they used

in the average quarter of the first half of 1950," he said.

The total tonnage of carbon steel allotted to the programs named in the first quarter of 1952 is about 14,200,000 tons. This compares with 7,500,000 tons used in the same areas in the base period, an increase of about 6,700,000 tons, he said.

• **Why construction cuts?**—Taking up the subject of cut-backs in certain phases of the construction industry, Mr. Fleischmann used in illustration Chart No. 2. He pointed out that a much larger tonnage of structural shapes has been allotted in the first quarter 1952 to the industrial facilities and resources expansion program than was used for this type of construction in the average quarter of the first half of 1950. Military and atomic energy construction is sharply higher. The power expansion program will almost double its use of structurals.

"On the other hand, by deferring less urgent construction and by conservation measures, including the substitution of reinforced concrete for structural steel construction methods, we have saved tonnage in school and hospital construction, in road and bridge construction, and in housing," he said.

This was essential to provide structurals for more urgent needs, in view of the fact that total screened requirements for structural steel, as submitted by the claimant agencies, were 185% of the anticipated supply, he said.

On Chart No. 3 (p. 24), he said "It is interesting to note, as this chart points out, that while the total dollar value of construction in the first quarter 1952 will be slightly lower than the value of construction in the base period, the use of structural shapes will be very much higher. This is a direct reflection of the changed character of the construction, with much greater emphasis on military, industrial, and power expansion, and much lower activity in commercial and similar lines.

He also pointed out the increased use of structural shapes for production materials for such items as heavy machinery and equipment for freight cars.

• **Inflated requirements?**—Yes, the CMP over-allots, Mr. Fleischmann says and here is why:

"Because we know that in the normal course of operation under CMP, some claimant agencies hold back reserves and do not distribute all the allotment authority granted to them by DPA; and because some prime contractors and sub-contractors, as a result of schedule changes, inventory

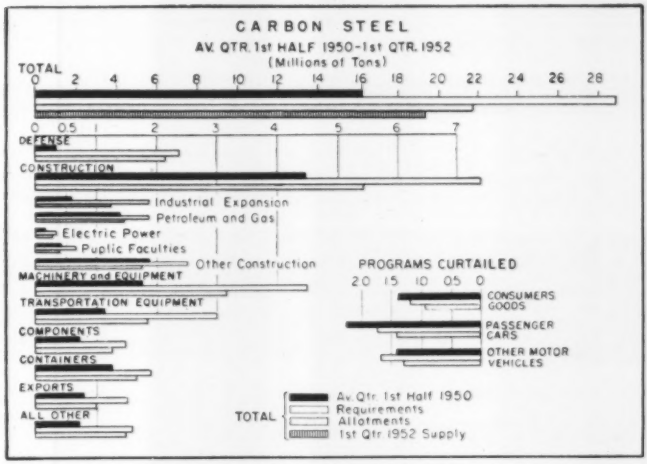

CHART NO 1—Where carbon steel is going under the CMP.

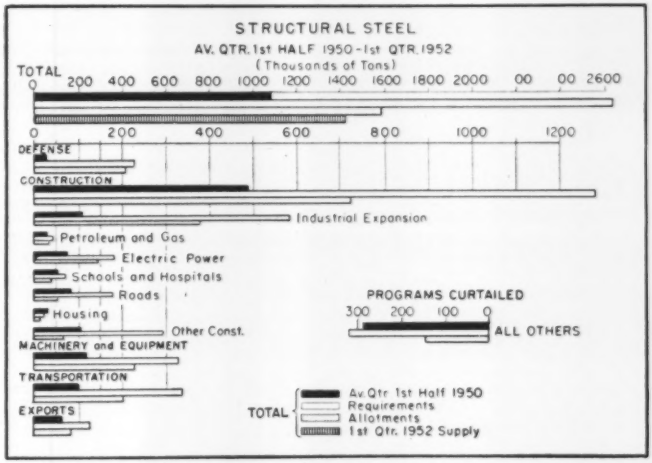

CHART NO. 2—Where structurals are going under the CMP.

position, errors in calculating requirements, or changes in specifications, do not place orders for the full quantities authorized, some of the tickets issued by DPA never get to the metal mills."

"If we made allotments to cover only the anticipated supply, there would be a loss in production because less than enough orders would get to the mills than would be required to take up full production. For this reason, we have allotted in the first quarter 1952 about 12% more than the anticipated supply," he said.

Screened requirements for the first quarter 1952, as presented to DPA by the claimant agencies, were about 50% in excess of the available supply of carbon steel.

"I think it is certainly true that there is some inflation of material needs for some programs. It is inevitable, in my judgment, that the staff of an agency charged with responsibility for a particular activity will tend to see the entire defense effort in terms of accomplishing high level objectives for their own program," he said.

He listed the various staffs, that seek to reduce the amount of inflation, however, and said "I think it is generally true that the claim presented for the first quarter represented reasonable judgments as to urgent needs."

"In connection with this observation," he went on, "I think it is significant that the steel industry has

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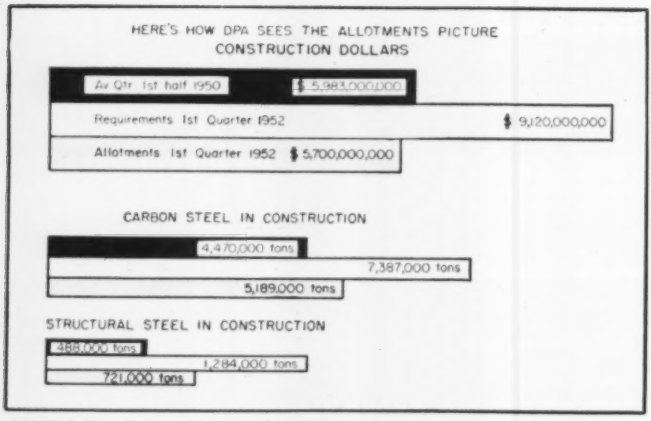


CHART NO. 3—How character of construction has changed.

CMP story . . .

never suggested that its own requirements for steel for expansion were unrealistic or exaggerated, although they have increased on a quarterly basis over 1950 consumption for the same purpose by some 600%."

This point will also be made clearer by a brief consideration of the demand for steel for schools, he said. Almost every community has funds available and wants to make up for construction which it did not undertake in recent years. There is nothing "phony" or unrealistic about any of these individual community requirements, although in the aggregate they greatly exceeded either normal rate of school construction or the amount of steel that could have been procured in an open market.

• Is CMP necessary?—In summary, Mr. Fleischmann said that the CMP is programming and directing the flow of steel and other controlled materials to meet mobilization objectives.

"Of necessity, the flow of steel differs now from what it would be under normal peacetime conditions. The areas I have indicated need more steel and, despite the increased supply available, other consuming areas must take less steel," he said.

"I know of no way in which these essential program decisions could be made intelligently by individual steel producers who cannot possibly have access to the broad picture of the total demand for steel or the specific needs of direct military and defense-supporting programs," he said.

"Nor do I know how these individual steel producers could direct the flow of steel to manufacturers of components in balance with the requirements for these products."

"Finally, I do not see how any single steel producer could assure steel to manufacturers in balance with the quantities of other critical materials they need, such as copper and aluminum."

He concluded with this statement:

"I want to assure you that I share with all of my associates a common desire to release American industry from restrictive controls just as soon as this is possible. But I cannot share the belief suggested by some representatives of the iron and steel industry that responsibility for distributing this critically scarce commodity should be turned back to normal commercial decisions by individual steel producers."

Steel executive takes opposite view of CMP

J. V. Honeycutt, assistant vice president of Bethlehem Steel Co. gave the subcommittee quite another view of the Controlled Materials Plan and the steel supply situation.

Are CMP estimates of requirements inflated?

"My idea of real steel demand is the tonnage of orders which consumers are ready to place on mill schedules based on a realistic appraisal of their production plans and inventory . . . I would not consider real demand to be represented in an order placed for 10,000 tons of structural shapes for delivery in the first quarter when the fabrication of those structural shapes cannot be undertaken prior to the third quarter because of the necessity of first completing the engineering, design and shop detail," Mr. Honeycutt said.

These days we have new terms to express "steel demand", he said. The terms "steel requests" and "stated requirements" are used. It is his opinion these are greatly inflated and it is a fallacy to think of these tonnages as representative of real demand.

"There is no penalty against anyone making requests for more than is needed, in fact the applicant can ask for two or three times more in order to outguess the estimated cutback that might be made. He has nothing to lose by such action," he said.

The reported "stated requirements" for the first quarter of 1952 furnish an example. Including the military, they were for 32,954,000 product tons.

"This would require an annual ingot capacity of 176 million tons. The total steel production of the world excluding Russia would fall short of meeting these 'stated requirements'," he said.

• Structural demand off—Mr. Honeycutt said the fabricating industry order book backlog has been steadily decreasing since April, and Bethlehem's backlog has been decreasing since January.

"When we examine the industry's monthly booking we find that actual orders placed for fabricated structural steel in the month of October are less than 50% of the orders booked in January 1951," he said.

"The number of tons on the jobs for which we have received inquiries has followed a downward trend since August of 1950. Our experience shows that it is the inquiries of today that result in orders that are needed to run the fabricating shops in the immediate future," he said.

He summarized that it is difficult to reconcile these declines with statements that the requirements for construction for the 4th quarter of 1951 were more than twice the available capacity and that the overall demand for structural shapes was 223% of supply.

• Is CMP necessary?—It is Mr. Honeycutt's observation that once the consumer has been given an allotment of steel, he makes every effort to place orders on the mill.

"The steel may not be as urgently needed as originally contemplated when the 'stated requirement' was filed, but the buyer cannot bring himself to give up his ration ticket because he is not certain whether or not he will get his share of ration tickets in the next quarterly period," he said.

With rationing in effect, the buyer feels obligated to secure the steel at once even though later delivery might be in time for his requirements.

"The Controlled Materials Plan perpetuates the idea of rationing, and, until it is revoked, the relationship of demand and supply will not find its practical level," he said.

Later he added that Bethlehem is determined to be "cooperative to the utmost of our ability with all government agencies in whatever methods and regulations they establish."

• **More cautious**—David Austin, executive vice president of U. S. Steel Co. predicted a surplus of steel within five years. He said his forecast is based on studies being made by "qualified specialists" working for his company.

Mr. Austin recalled that he thought CMP was unnecessary when the government first selected that method of rationing out all steel, copper and aluminum supplies. But he added that U. S. Steel is "not protesting: we are cooperating."

He said he feels Mobilizer Charles E. Wilson, Mr. Fleischmann, and their subordinates—are qualified men who have access to information from the Pentagon, State Department, and White House which enables them to have a better knowledge of the task confronting the nation.

The basic test of CMP is whether it makes steel flow smoothly wherever government controllers want it to go, he said.

Accident prevention urged to avoid federal action

WASHINGTON—Accident prevention in the construction industry was given new emphasis this week by Glen W. Maxon, president of the Associated General Contractors of America.

In a letter to 118 chapter and branch presidents of the AGC, Mr. Maxon cited the critical accident and death rate among construction workers. In 1950 there were 93 deaths per 100,000 workers in the construction industry, second only to the death rate of the mining industry and more than double all other industries. The letter went on to state that construction workers had the highest accident rate of any other industry. A total of 8,300 workers per 100,000 were injured in 1950 on construction work. The average for all other industries was 3,360 per 100,000.

Mr. Maxon urged that a strict and voluntary accident prevention program be followed. He said that such precautions would not only be a good investment but would avoid possible government legislation regulating accident prevention methods. These laws, he said, would be made by outsiders and could prove hampering and costly to the industry.

New phase of atomic energy program holds heavy impact for construction

NEW YORK—The express-train impact of the atomic energy program on construction, enormous as it has been, is going to become much larger.

The Atomic Energy Commission and the Department of Defense are now working on plans for a third phase of expansion in atomic energy productive capacity, Commission Chairman Gordon Dean said here last week.

And full effect of the second phase has not yet arrived.

The current program is actually the Atomic Energy Commission's second major expansion effort, Mr. Dean said.

"The first one, consisting of projects begun in 1949, involved mainly a $300-million expansion in the productive capacity of the Hanford plutonium plant, and a $220-million expansion in the productive capacity of the Oak Ridge separation plant.

"The main ingredients of the current program—the second—are a huge new plant at Aiken, S. C., which eventually will cost more than $1,250 million, and a new $500-million plant at Paducah, Ky.," he said.

• **Factors involved**—He outlined the following factors being considered in plans for the third phase:

(1) New expansion will be over and above the AEC's allotted place in the present production program—"the program that is expected to level off about the end of next year with a 20% take of the total national productive effort."

(2) New expansion will be in competition for materials and manpower, not only with civilian needs, but also with other needs including even "the needs of our own current construction program."

"Physically, we will be expanding an industrial and scientific enterprise in which the capital investment already amounts to something like $2,500 million, and in which this investment will eventually climb to around $5,000 million on the basis of the expansion program already under way," he said.

• **Construction figures**—"As a sidelight on how deeply we penetrate the economy, and on how much we must rely on many different industries in such expansions," he said, "I would like to refer briefly and specifically to the Savannah River project."

In the 12-month period ending last September, AEC obligated about $650 million on this project, he said. One prime contractor—the du Pont Co.—is responsible for the entire job.

"Du Pont, in turn, in the same period, passed on more than $325 million to over 1,500 other concerns, of which 11 received subcontracts of $5 million or more, 81 received subcontracts of $500,000 or more, and 386 received subcontracts of $25,000 or more," he said.

He pointed out that the Office of Defense Mobilization is also at the same time trying to increase the production of military items, and expand basic productive capacity of metals, electrical energy, and petroleum, in order to keep the program in balance.

• **Power program cited**—"The atomic energy program is consuming power at a rate which by next June will be comparable to that of New York City, or roughly 2% of the total national supply—and this demand will increase enormously as additional plants now under construction begin to come in," he said.

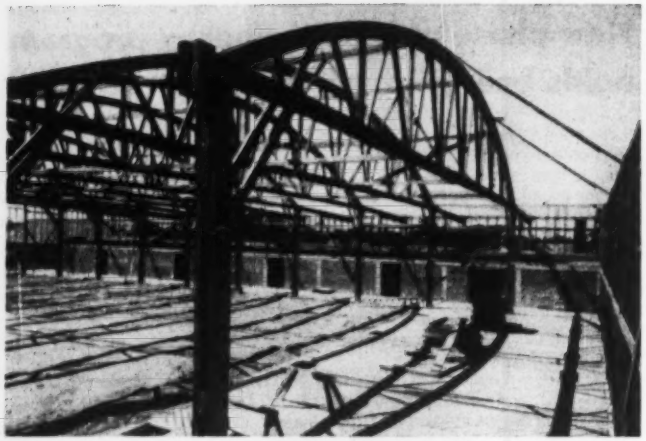
He pointed out that the power capacity of the U. S. is now being expanded, and new generating capacity of nearly 7 million kw will be added by the end of this year—a 10% increase over 1950.

But this expansion has begun to run into the critical shortages of steel, aluminum and copper . . . and it is very questionable whether it can be expected to continue at the same rate, he said.

"Now the interesting fact is that all of this increased capacity will be spoken for by the time it comes in, and this means that any new demand on the part of the AEC must be met by new facilities, which in turn means getting into the already short supplies of steel, aluminum and copper still further."

• **Labor factor**—He said that of about 3 million people currently comprising the construction labor force of the U. S., about 52,000 are now working for the AEC, and "even without another expansion program our bite will go up still further before it begins to come down."

"At its peak, our demand at the Savannah River plant alone will amount to more than 40,000," he said. "Although there is at present no overall construction labor shortage in the U. S., it is, as you know, extremely difficult to mobilize an adequate supply at the right place and at the right time . . . and this task will get increasingly difficult as the demand begins to catch up with the supply."



WOOD FOR A WAREHOUSE—This building put up by the Missouri Pacific Railroad at Alamo, Texas, for warehousing purposes has roof supports consisting of nine 88-ft bowstring trusses designed, prefabricated, and erected by Connector Truss Co., Houston.

Planners urge wood as steel substitute

WASHINGTON—The lumber industry and Washington planners have offered the construction industry what they consider to be a practicable alternate for structural steel–fabricated lumber.

The proposal isn't entirely new—it comes with trimmings of practice used in World War II. But, they have come up with a listing of construction and building items ordinarily using steel which they claim can be replaced with fabricated or chemically treated lumber at tremendous savings of structural metal. These range from household construction items like door frames and sliding partitions to warehouse trusses and crane ways.

Lumber fabricators working with the Lumber and Wood Products Division of the National Production Authority and the Munitions Board feel they have a program that won't sacrifice anything in quality or safety from that represented in structural steel.

• **Close cooperation**—Recent developments in the manufacture of plywood and in chemical treating of wood are the key, say proponents. These new techniques give wood a greater toughness and heat resistance that make it practical to be substituted for structural steel in a wide variety of construction.

Evidence of the close military coordination in the immediate and long term programs is the recent plywood conference where specialists of the various segments of the industry gathered to answer the questions of the military. These questions, keyed to the theme of "How can we do a better job for, and save, the taxpayer's dollars?" were answered quickly and with examples.

Both the military and the industry were so satisfied with the meeting that they are now discussing a similar meeting for laminated and fabricated lumber items.

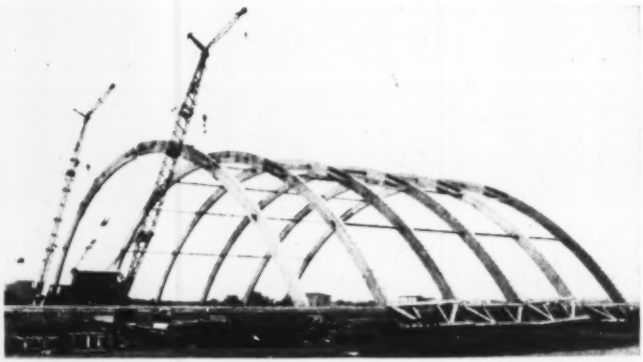
• **Encourage consideration**—In pushing the program the military and NPA have utilized every opportunity to provide information to businessmen on the proper types of wood to use as an alternate to metal. They have encouraged the re-evaluation of the use of wood in programs where wood is an acceptable alternate. They have done this by recommending the limiting of allocations of metal to industries where wood is practicable. And they have also pushed the use of wood in proposals to interdepartmental committees of NPA and DPA, the military and the industry itself.

In many fields once exclusively served by lumber, metals have been substituted because they were available as "package" items. The lumber industry itself admits that it is in part responsible for this change in construction practice.

During the past lush period they have not made the forward strides in design and utilization made in the metals and plastics industries. Lamination for greater dimensional stability and strength treatment with special chemicals for fire retardance or weather resistance have lagged behind metal techniques of alloying for rust resistance, greater hardness, and abrasion resistance.

But industrial spokesmen believe that the industry is finally catching up. They point to the tremendous growth of the plywood industry, double World War II, as an initial stride in fabrication and design. By fabrication with the newly developed gluing technology, superior stress factors can be achieved. They can now give the military and civilian designer a product alloyed to his particular needs.

• **Cite examples**—Some examples of the saving that could be effected with the use of wood are in aircraft hangars where wooden spans can be used as an alternate to steel. In some hangars use of 68-ft wooden spans would save 40 tons of steel. In different type hangars using 168 ft spans and 260 ft spans the savings per hangar is



WOODEN HANGAR—Cranes lift giant three-hinged laminated wood arches into place on the new $250,000 private airplane hangar which Wigton-Abbott Corp. is building for Continental Can Co. in Morristown, N. J. Fabricated on the West Coast, the arches will support a corrugated asbestos roof with a clearance of 45 ft. The hangar will measure 180 x 160 ft when completed.

120 tons and 300 tons of steel respectively. These figures are noteworthy in themselves, but added to that is the claim that laminated timbers, with considerable less weight factor than steel, have equal strength in flash fires that occasionally occur in aircraft hangars and other such structures.

Other savings can be made by the use of fabricated timbers as residential trusses, as commercial and industrial trusses, and as school, church, and bridge trusses. And in each case the saving in scarce materials by the use of wood amounts to about 95%.

But industry spokesmen say that in most cases extensive research will not be needed. Generally, they agree, all that will be needed will be slight design improvements to provide efficient facilities that are competitive and equivalent in use to metal.

For instance, in the case of kitchen cabinets, wardrobes, bathroom cabinets, door jambs, and sliding doors, the minimum percentage of saving would run to at least 90%. And none of these uses would involve more than a few minor changes in design.

The burden of perfecting these designs must start at the production level and continue through the lines of distribution to the fabricator himself. The bulk of the savings in metal will be accomplished at the sub-contractor level because the volume is several times larger than at the prime contractor level.

Part of the impetus for change will come from military personnel. These men must report on the savings in costs in facilities or products, on the conservation of metals or wood, the savings in manpower, and savings in transportation problems or expense.

With the top-level brass in the military, NPA-DPA, and the lumber industry all interested in the conservation of scarce metals, the lower echelon procurement officers will be under pressure to push the use of wood wherever practicable.

• Plywood slump—Plywood plants in the Pacific Northwest are feeling a sharp pinch, probably the delayed effect of the current slump in house construction.

At Astoria, Ore., the worker-owned Astoria Plywood Corp. has closed, but expects to reopen this month to fill contracts now on hand. The Wheeler-Osgood plant in Tacoma, Wash., has been closed since late summer and the Northwest Door Co.'s plant, also at Tacoma has been closed briefly.

Despite the falling-off of orders and the recent drop of about 20% in production, the Plywood Assn. reports that production for the first 45 weeks of 1951 was almost 15% above that of the same period last year.

BIG FILL—On the Lenior-Blowing Rock road in northwest North Carolina highway engineers are pushing a lot of dirt. A giant fill that drops to more than 100 ft and measures 410 ft from bank to bank is part of a road project now under construction. Located at Robins Gap near Blowing Rock, it will require 81,189 cu yd of dirt to form the roadbed. (Rufty photo.)

More federal aid sought for highways

WASHINGTON—An increase in the federal-aid authorization from the current $500 million a year to $810 million will be sought by the American Association of State Highway officials when Congress convenes in January. This decision was reached at a recent special meeting of the AASHO administrative officers.

The 1950 highway act authorized the appropriation of $500 million for the fiscal years beginning July 1, 1951 and July 1, 1952. That money has been appropriated and allocated to the state highway departments. Early next year Congress will act on authorizations for the fiscal years beginning July 1, 1953 and July 1, 1954.

AASHO will propose that the funds for each year be divided as folllows:

Interstate system	$210,000,000
Primary federal-aid	270,000,000
Secondary " "	180,000,000
Urban " "	150,000,000
	$810,000,000

For road work outside the state systems the AASHO plans to ask Congress to authorize the following annual appropriations:

Forest highways	$32,000,000
Forest development roads	28,000,000
National Park roads	16,000,000
Park access roads	17,000,000
Indian Res. roads	10,000,000
Public land roads	5,000,000
	$108,000,000

• Matching by the states—No change in the percent 50-50 matching of federal funds by the states is to be recommended. Nor will any change be proposed in the current formula for computing the amounts of funds appurtenant to each state for the federal-aid primary, secondary and urban work. However, the association again will recommend that money for work on the interstate network (about 40,000 miles) be apportioned on the basis of population, and that no state receive less than ½ of 1%. These funds also would be matched on a 50-50 basis. No specific allocations to the interstate network were included in the 1950 act. Practically all roads in the network are part of the primary.

Authority to switch not more than 25% of the money apportioned to each state for the primary and secondary systems from one account to the other is to be sought, provided the transfer is approved by the Commission of Public Roads.

Authorization of an appropriation of $15 million to be available to the state highway departments for repair of roads damaged in major floods also is to be asked. The 1950 act authorized $5 million for that work.

DISCUSS CONSTRUCTION PLIGHT—Louis Skidmore, of Skidmore, Owings & Merrill, president of the New York Building Congress (left) and George Dandrow, vice-president of Johns-Manville Corp., and vice-president of the New York Building Congress helped to inform Defense Production Administrator Manly Fleischmann (center) of vital problems facing New York Builders. (ENR photo)

Harried construction men promised aid

WASHINGTON — The Construction Controls Committee of the New York Building Congress last week laid its problems before top mobilization officials and got a promise of prompt cooperation.

At meetings in New York with Manly Fleischmann, Defense Production Administrator and in Washington with Defense Mobilizer Charles E. Wilson, they cited figures to prove their case. Dollar volume of new construction started in the first ten months of this year was nearly 33% less than in 1949—and the worst is yet to come. As an indicator, jobs on the drawing boards of New York architects are down 90% from two years ago.

Labor members of the group reported that of 150,000 workers represented in the New York Building and Construction Trades Council, AFL, unemployment may rise to 70,000 by June and even to 90,000 soon afterward.

Analyzing prospects in New York City, the committee showed residential construction is off 50% and a denial rate of close to 90% for CMP applications; school construction off in almost the same proportion and little defense plant work. The city's construction industry stands on the brink of being wiped out.

• **Special problems**—Several factors make New York's problems unique, the committee told the defense officials. Building depends to a large extent on commercial construction. In a densely populated area of high land values, only buildings that run up to a number of stories are economically feasible, and these structures require controlled materials.

Three principal remedies were suggested. Mr. Fleischmann said they would be considered and a new directive to ease the situation would be issued shortly. The recommendations are:

(1) Do away with quarterly allotments of critical materials and make future allotments on the basis of an entire project.

(2) Projects granted permission to proceed under regulations subsequently revoked, to be investigated individually and consideration given to new applications for construction.

(3) Set up an impartial public committee to pass on building applications at the New York Office of the National Production Authority, and give the regional director authority to follow committee recommendations.

(4) Give greater consideration to recommendations of the Construction Industry Advisory Committee before promulgation of controls on the industry from Washington.

Both Mr. Wilson and Mr. Fleischman made solid commitments to reappraise the New York situation and take remedial administrative action as soon as it can properly be drafted.

Hole in road costly

A construction worker, who was thrown under the wheel of a contractor's truck when it struck a hole in a street, collected $100,000 damages last week from New York City. Thomas Ryan, 42, charged that the city failed to keep the street in good repair.

NEWS BRIEFS

• **Bay State highways**—The 1952 agenda of the Massachusetts Legislature is bristling with proposals for highway improvements. Last week, a bill proposing another $200-million state bond issue for highway modernization was filed. Also filed last week was a bill proposed a study of the feasibility of "revenue-producing highways and bridges." Another measure proposes creation of a Boston-Springfield Highway Authority to construct a four-lane toll road.

• **Big used equipment sale**—The purchase by Luria Brothers & Co., Philadelphia, of $1 million worth of construction equipment used by Contractor Sam Rosoff in building the 17-mile Baltimore aqueduct is one of the largest single transactions of its kind on record. Everything left over from the job, from 9-cent gaskets to $60,000 cranes, is now stored in an area near Randallstown, Md., that resembles an army depot. Equipment is being reconditioned for resale.

• **Golden gate bridge repairs**—San Francisco papers had scare-type headlines last week announcing damage to the Golden Gate Bridge from the windstorm of Dec. 1. (ENR Dec 6, p 28). Actually, the damage is a safety-valve-sort-of-thing. Pressure of the wind caused the suspended span to exert extraordinary sideways pressure at the expansion joints next to the towers. This resulted in wearing out of soft bronze bushings in the joints that bear against harder steel members. Repairs will involve rebabbitting these bushings. Some expansion joint sections will have to be removed to accomplish the work.

• **Power for Texas**—Plans to spend $65 million for construction of power facilities have been announced by Southwestern Public Service Co. Largest project in the program is a 150,000-kw plant being built near the town of Earth, Lamb County, Tex. The company will spend about $21 million to next Aug. 31, about $24 million the next fiscal year, and about $20 million in 1953-54.

• **Supersonic wind tunnel**—Construction of a $27-million supersonic wind tunnel, 8 ft dia., for the National Advisory Committee for Aeronautics has been started at Ames Aeronautical Laboratory, Moffett Field, Calif. One of the three authorized by Congress, it will be used for testing airplane and missile models at velocities higher than the speed of sound.

Huie

Horner

Wolman

Saville

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Water source future still uncertain

By Arthur J. Fox, Jr.
Associate Editor

NEW YORK—Now it's really official. Three documents finally released this week confirm what has already been said in these pages (Dec. 6, p. 17): The Hudson River is the future water source recommended for further investigation and planning by the city's panel of consultants.

But it's not final. Along with this recommendation was released a critical analysis of it by the city's Board of Water Supply, engineer agency for design and construction of new sources.

Document No. 3 released was a cold cost comparison—upland vs. Hudson River waters—put together by staff of the Mayor's Committee on Management Survey. This group was tossed the hot water-supply potato back in 1950 when the situation was critical, and Hudson proponents were pushing for a reversal of present policy.

Consultants to the mayor's committee, who have searched available information and come up with the Hudson recommendation, are: Thorndike Saville, dean of NYU's college of engineering; W. W. Horner, Horner & Shifrin, St. Louis; L. R. Howson, Alvord, Burdick & Howson, Chicago; Abel Wolman, professor of sanitary engineering, Johns Hopkins U. (ENR May 25, 1950, p. 27).

Acting for the Board of Water Supply in release of counter recommendations favoring third-stage development in the Delaware Basin, was BWS President Irving V. A. Huie.

• **What now?**—Next step will be a closed meeting on Dec. 18 of the policy committee, the panel of consultants and the Board of Water Supply. Public hearing may follow, if necessary, but it is intended that a final policy recommendation will follow the Dec. 18 meeting, "fairly promptly."

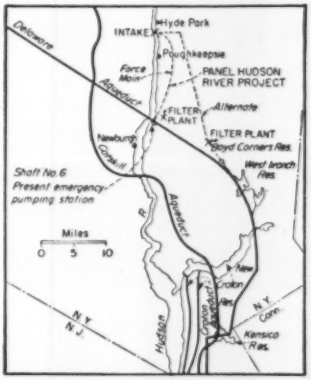
The opposing camps will fight it out on two different scores: economics and quality.

The panel calls the Hudson cheaper; BWS says its planned Connonsville Reservoir would cost less over the long pull. Cost comparisons by the mayor's committee put the Hudson cheaper by various amounts, depending on whether figured on true depreciation or an assumed amortization rate. Then they assume some future inflation and find Cannonsville would be cheaper.

Quality arguments may well decide the issue. Deep-seated New York pride in pure waters will be tough for panel engineers to overcome with their claim the Hudson, with filtration, can be made at least as good as the present product. BWS has expert opinion with which it will try to counter this.

• **Panel plan**—A 325-mgd intake would be built above Poughkeepsie. Water pumped to a filter plant south of that city would be treated and pumped into the Delaware Aqueduct at shaft 6, site of the city's emergency Hudson pumping plant—recently finished, but never used. Construction cost would top $39 million; average annual operating cost would be some $3 million, according to panel estimates.

As an added chore, the panel figured what filtration of all New York City water sources would cost: $109,685,000 in one 1,400-mgd and one 350-mgd plant. The panel calls complete filtration not urgent, but recommended. BWS calls it unnecessary as long as the Hudson is excluded.



PANEL PROPOSAL—Take 325 mgd from the Hudson River above Poughkeepsie, filter it, and pump it into the Delaware Aqueduct, experts recommend.

• **BWS rebuttal**—The board calls the panel's report "a hasty judgment . . . by a group of otherwise eminent engineers, who have (admittedly) been severely limited as to time and budget . . . a potential source of trouble, a weapon in the hands of our adversaries" in petitioning the Supreme Court for approval to make further upland diversion—323 mgd at Cannonsville.

Claiming that since its inception (1905) it has recognized the Hudson as an eventual source, the board nevertheless points out that the Delaware Aqueduct was built with capacity for anticipated waters from Cannonsville. They argue, too, that the Aqueduct could not be shut down for the panel's proposed connection at Shaft 6.

Power expansion plans to aid industrial boom

COLUMBIA—In South Carolina, some big steps were taken last week to increase electric power for construction including heavy defense expansion.

An electric generating plant, at an estimated cost of $45 million, will be built near the Atomic Energy Commission's Savannah River plant. Announcement came from the South Carolina Electric and Gas Co. that construction is slated to begin on the first two units of the plant in about 30 days. First of the four 75,000 kw generators is expected to be delivering power in the early spring of 1953.

The Lyles Ford Tri-County Power Authority of South Carolina (a state-created public power agency) is also interested in boosting the state's power output. It is seeking to build a vast mid-state hydro-electric power development at a total cost of $113.9 million. The project will consist of three separate dams, each with a hydro-electric power plant, and one steam generating plant.

TIGNES DAM looked like this last month when concreting stopped for the winter. Picturesque tourist village will disappear next spring when reservoir begins to fill while concreting is carried to completion.

Europe's tallest dam rises in French Alps

Waldo G. Bowman
Editor

WHEN TIGNES DAM IS COMPLETED in 1953 it will have the distinction of being the highest in Europe—592 ft. This will make it famous—while the record lasts—but the dam has other and more significant claims to importance:

Tignes Dam is situated on the finest hydro river in France—the Isere—and founded on what has been characterized as the finest dam site in that country.

More important, its reservoir will be the first—and the largest—to regularize the flow of that glacier-fed stream, and start it on the road to full development of its hydro potentialities—estimated to be 10 billion kwh annually. As a beginning, Tignes' waters will feed two power plants now under construction—one just downstream, the other 9 miles below—with a combined annual output of some 700 million kwh. Although this output is less than that of France's and western Europe's largest hydro plants—at Genissiat on the upper Rhone (ENR June 24, 1948 p 1024) and Donzere-Mondragon on the lower Rhone (ENR Nov 22, 1951 p 30)—the combined generator installations of the two Isere plants is greater—428,000 kw against 390,000 kw at Genissiat and 300,000 at Donzere-Mondragon.

Also not to be overlooked in any accounting of the interesting aspects of the Tignes dam and power project are the construction methods being used. Built at an altitude of nearly 6,000 ft, the dam can be worked on only 150 days a year. It was, therefore, imperative to build it at the greatest speed possible. As a consequence, a large and highly mechanized plant has been assembled in which American equipment—shovels, cranes, cableways, concrete mixers, crushers, bins and trucks—are playing a prominent part.

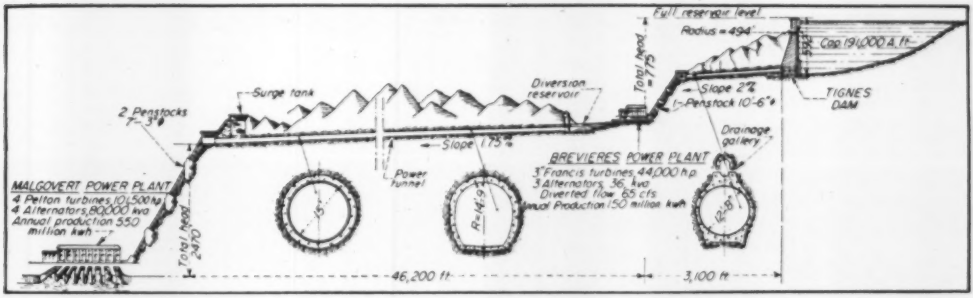
• **What is involved**—The general plan for the Tignes development, a project of Electricite de France, the nation's power agency, is shown in the drawing on the next page.

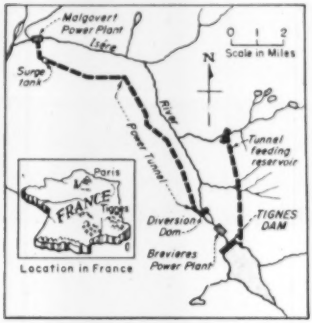
There are five main elements—a dam, two power plants, a 9¼ mile tunnel and a mile-long penstock operating under a head of nearly 2,500 ft. The dam, of arch type, is founded on quartzite in a narrow valley below a wide plain. About 970 ft long on the crest, the dam will require 850,000 cu yd of concrete. There will be no spillway, two 7.25 ft dia bottom sluices being ample to carry off the maximum flood discharge, estimated at 8,500 cu ft per sec. The dam, 143 ft wide at the base, extends about 65 ft below the river bed, so that excavation amounting to about 40,000 cu yd was required. An additional 60,000 cu yd had to be removed at the abutments.

The reservoir, of 191,000 acre-ft capacity, cannot be filled by the normal flow of the Isere, so that two tributaries are tapped by a tunnel to augment the supply.

Two-thirds of a mile downstream from the dam, the Brevieres power plant is being built to handle a flow of 1,750 cu ft per sec under a head varying from 755 to 318 ft. Water is carried to the power plant through a 3,000-ft steel-lined tunnel 12.6 ft in dia and a 720-ft penstock 10.5 ft in dia.

Water discharged from the plant





PROJECT ELEMENTS (above and left) include the 592-ft Tignes Dam, the 108,000-kw Brevieres power plant, a 9-mile power tunnel and the 320,000 kw Malgovert power plant. High head (2,460 ft) steel penstocks at Malgovert are of the prestressed hoop type. The map also gives the location in France.

reenters the Isere where it flows for a distance of about 4,000 ft to a small diversion dam beyond which a 9¼-mile tunnel parallels the river to the Malgovert power plant. This tunnel, of about 175 sq ft cross-section, is of horseshoe shape in good rock and circular in poor rock. Drilled from the portals and a dozen side drifts, it has been under construction since 1941. It ends in a 164 ft high surge tank or well. It is 60 ft in dia, but flares out at the top (near ground level) to 99 ft.

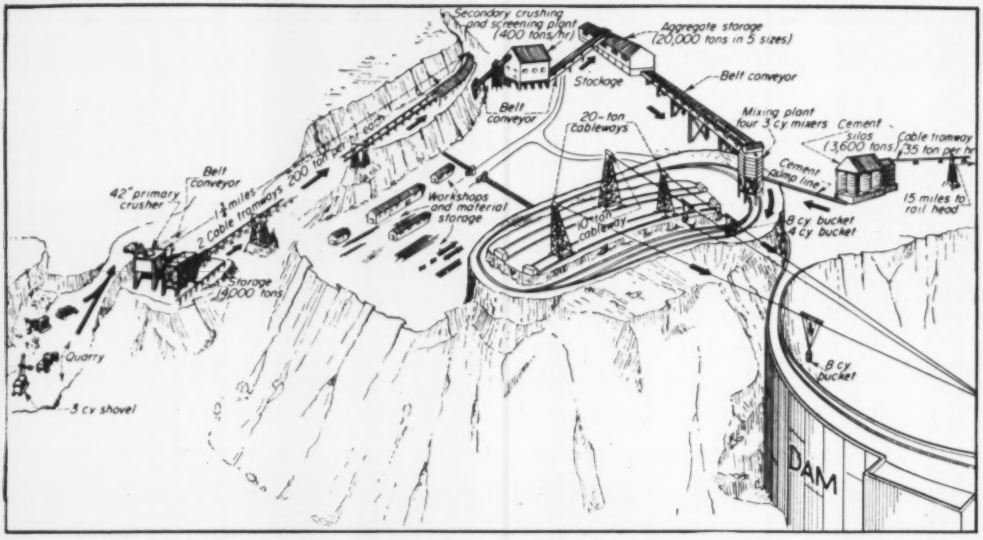
• **High capacity penstocks**—From the surge tank two 7.25 ft dia penstocks about 5,700 ft long lead to the Malgovert power plant 2,460 ft below. Although plate thicknesses are only ⅛-in minimum and 1⅛-in. maximum these penstocks are enabled to carry the extremely high head by virtue of special hooping, which in the higher-stressed lower part consists of steel cables and in the upper part of rolled steel straps.

The high strength is contributed by the process used by the fabricator, Bouchayer & Viallet of Grenoble, in applying the hoops of a steel having an elastic limit much higher than that of the pipe. The hoops have a diameter enough larger than the pipe to permit them to be shipped on easily. Then, with the hoop (whether of cable or steel straps) properly spaced, the whole assembly is subjected to internal hydraulic pressure until the pipe expands enough to stretch the hoops tight. In the prestressing process, called "auto-frettage" or self-hooping, the pipe metal, having passed its elastic limit, acquires a permanent deformation.

The steel used in the Malgovert penstocks has an ultimate strength of 79,600 psi while the strength of the rolled steel hoops is 156,400 psi. and of the cables 285,000 psi.

These two pressure pipes together will require about 4,500 tons of steel. It has been estimated that, without the hooping, seventy pipes side by side weighing altogether 35,000 tons, would have been required for the

TWO SEASON'S PROGRESS. At end of 1950 (left) 200,000 cu yd of concrete had been placed in dam with hammerhead cranes set up on floor of gorge. At end of this season (right) high-line cableways had placed 400,000 cu yd more. The tunnel into the right abutment is the temporary route of a road to be relocated on the rim of the reservoir.



CONSTRUCTION PLANT ON A PLATEAU assures the rapid concreting required because of short working season in the high Alps. Most of the equipment is of U. S. make.

same service. In other words, the installation would not have been made.

• **Construction plant**—Faced with short working seasons (150 days a year) and the need to place 850,000 cu yd of concrete in 3 years, the contractor immediately faced up to the necessity of a highly mechanized plant. Logically this should be installed at a higher elevation than the top of the dam—and an adjacent plateau near the left abutment offered an ideal site.

But access was difficult, and equipment installation would take time. The decision, therefore, was to establish a first-stage concrete mixing and placing plant on the floor of the gorge so that dam construction could get underway immediately—at the same time starting work on the plateau plant installation so that it would be ready for the second season.

• **Gorge installations**—Since excavations and abutment scaling had been completed in 1949, concreting was begun at the start of the 1950 season—about April 15. A central plant with two 2-cu yd mixers was set up near the base of the dam. Aggregates were obtained from a nearby quarry and sand from the river bed. Cement was pumped to the plant from storage silos set on the plateau and filled by a 15 mile long single-cable tramway from the rail head.

At the dam, a few hundred yards away, two 3-ton rail-mounted hammer head cranes with 100 ft reaches were installed, one at the upstream face one at the downstream. Locomotive-hauled flat cars carrying two 2-cu yd buckets fed concrete to these cranes.

With this set-up, concrete was placed up to about 150 ft after which the high level plant took over.

• **Plateau installations**—To secure access to the plateau, 700 ft above the valley, the contractor built a 2½ mile winding road over which the equipment could be trucked. But once the plant was in service, material supply took to the air—via cable tramways and belt conveyors.

The layout of the plateau installations is shown in the drawing above. The aggregates are obtained from a high level quarry 1¼ miles upstream where the primary crusher is located. Carried across to the plateau in the buckets of two cable tramways, the aggregates are first stocked, then passed through the secondary crushers and the screening plant to emerge in five sizes—0 to 0.12 in.; 0.12 to 0.6 in.; 0.6 to 2 in.; 2 to 4.8 in.; 4.8 to 10 in.

Aggregates flow to the mixing plant over belt conveyors, and the cement is pumped from the storage silos.

Compactness characterizes the 235-cu-yd-per-hour mixing plant, the four 3-cu yd mixers being spaced uniformly in a circle, discharging toward the center. Six storage silos—for the cement and the five sizes of aggregates—are similarly grouped above the mixers. A loop rail line passes under the plant, and diesel-locomotive-hauled flatcars move the buckets of concrete, to the cableways and back.

Buckets of 8 cu yd size are transported by two 20-ton cableways. There is also a 10 ton cableway arranged to handle 4-cu-yd buckets, but during the 1951 season it has only been used to move equipment and special materials. All three cableways utilize a single fixed tail lower on the far side of the gorge, and have spans of about 2,000 ft.

During the 1950 season about 200,000 cu yd of concrete was placed in Tignes Dam. This past summer more than 400,000 yd was deposited in 141 working days. This leaves only 250,000 yd for 1953, and the contractor believes it can all be placed by Oct. 15. Concurrent with the annual concreting, the reservoir will gradually be filled, so that power generation at the Brevieres plant can begin at the earliest possible moment, probably in 1952. Malgovert's generators are being installed this summer, but will probably not be in service until 1953.

Tignes Dam, the tunnels and power houses are being built under contract by L'Entreprise Industrielle of Paris. The dam adds another design achievement to the long list connected with the name of Andre Coyne, head of the consulting firm of Coyne & Bellier of Paris. Mr. Coyne is pictured on the cover of this issue beside another of his dams, L'Aigle, famous for its ski-jump spillways, a Coyne creation.

For more news from abroad see "International" p. 51.

A Solid, DRY foundation for the Swifton Village— Cincinnati, Ohio

Al Loreti applying two coats of Thoroseal to foundation of one of 1200 units. Economy plus durability has made The Thoro System materials a "must" on the list of contractors who know the importance of masonry protection.

An architect's conception of a unit at Swifton Village where the $25,000,000 project will house 4,500 people.

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The Jonathan Woodner Company, designers and builders of The Swifton Village, are using Thoroseal for foundation coatings on their 7-acre housing project.

The Thoro System materials, used on this project, furnished by the Oakley Coal & Supply Company, through The Nurre Company, Cincinnati, Ohio.

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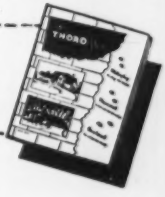

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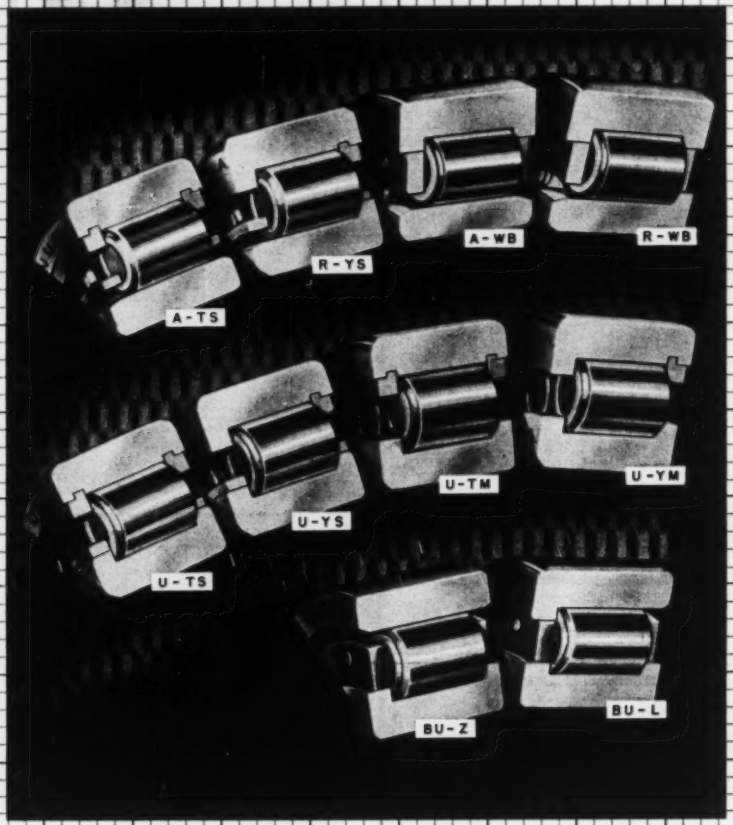

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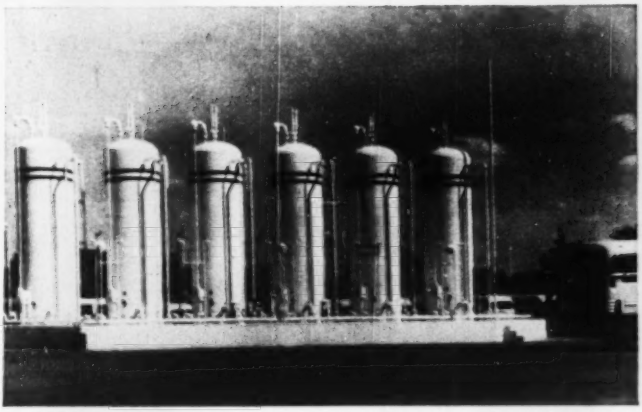
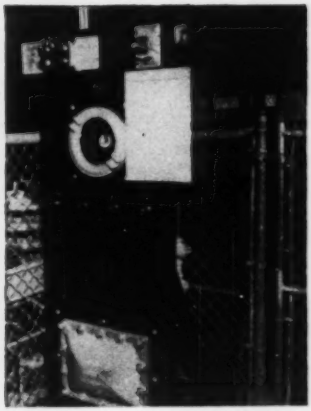


POTENTIAL DANGER—Bank of propane storage tanks surrounded by concrete buffer wall dominates outdoor parking lot at San Antonio Bus Terminal.



PROTECTION—This alarm panel warns of dangerous gas concentration.

Tricky fuel sets bus terminal design

USE OF PROPANE as a fuel for motor buses has created new problems in storing and handling this highly volatile compound—a gas in normal atmosphere, but a liquid under pressure.

When the San Antonio Transit Co. of San Antonio, Texas, recently built new storage and maintenance facilities for its fleet of propane-fueled buses, it found that storing the large quantities required and the necessity for frequent handling of the gas posed a difficult problem.

Contemplating construction of the $1,250,000 facility, the transit company called in the Hudson Engineering Co., of Houston, Texas, to assist in designing the plant. The Fire Prevention and Engineering Bureau of Texas, and the Health and Safety Division of the U. S. Bureau of Mines also participated, as consultants.

The result is described as a model for this type of operation.

• **Detection**—One of the chief problems concerned a method for accurately detecting and reliably warning of combustible concentrations of propane in the atmosphere near storage tanks, piping, valves, fueling station and repair pits.

This problem was solved by the installation of multi-point combustible-gas alarm systems (developed by Mine Safety Appliances Co., Pittsburgh), which continuously sample the atmosphere from eight different locations, analyze the samples and instantly warn when the gas-air mixture reaches 40% of the lower explosive limits.

Two separate systems are used—one to protect the outdoor storage and loading and unloading facilities, and the other to serve the repair zone inside the steel-and-glass maintenance building, which has a floor area of about 45,000 sq ft.

• **Outside system**—Four sampling lines run to each alarm panel. The system protecting the storage unloading area and fueling rack has one line running 240 ft from the instrument to the six 5,000-gal. propane storage tanks. Another sampling head is located in the covered trench that contains fuel lines between the storage tanks and the fueling rack. This latter system is arranged to detect leaks in the transmission piping. Another system draws samples from the propane unloading dock about 75 ft from the instrument panel, and a fourth line serves the bus fueling station.

• **Inside system**—About 300 ft. west of the filling station—which is an outdoor canopy-covered area—is the service building and warehouse.

The second four-point gas-alarm system samples air from repair pits in this building. This was installed because some propane might escape through leaks in carburetor lines or fittings and pressure-relief valves on the tanks.

Another danger might be that fuel in tanks filled outdoors on a cold day might be liberated through pressure-relief valves if the buses are moved inside and warmed up, since temperature rise causes the propane gas to expand.

Additionally, since the bus fuel systems are under pressure, contamination of the atmosphere would occur faster than with fuels of lower volatility. For this reason, the automatic alarm system is designed to provide a warning long before the air becomes dangerously contaminated.

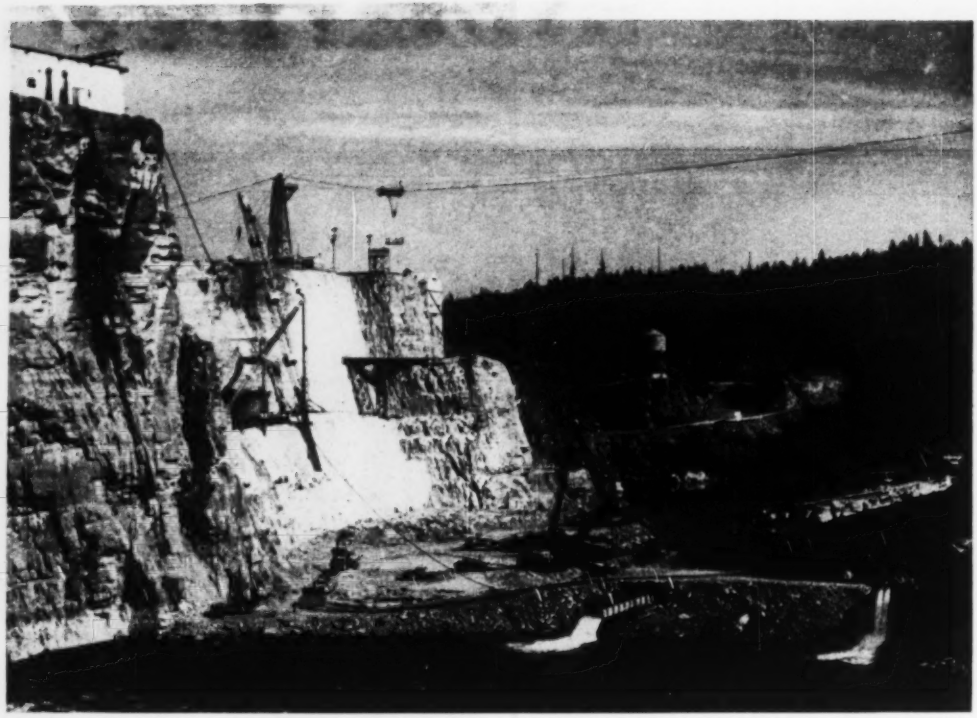
• **Additional safeguards**—The outside filling station at San Antonio is also equipped with a water fog system manually operated from points close to the fueling rack. Similar systems also are provided for the unloading dock and storage tanks.

Throughout the entire terminal, precautions are taken to safeguard against fires and explosions. All electrical equipment is explosion-proof, for example.

• **Operation of alarms**—The gas-alarm systems, which can be adapted for use with nearly all known combustible gases, according to the manufacturer, are explosion-proof so that they can be mounted in the hazardous area.

In operation, air samples are drawn into the instrument and passed over one of two heated sensitized platinum filaments, which form a balanced electrical circuit. One filament, known as a compensator, is sealed in a cell containing uncontaminated air. Any combustibles present in the air sample are burned on contact with the other filament, known as the detector. This burning raises temperature and electrical resistance, thus unbalancing the circuit.

The degree to which this circuit is unbalanced is directly proportional to the concentration of combustibles in the sample. This is measured by an indicating contact-making meter, designed so that when the needle reaches a predetermined point, a magnetic contact is closed to energize the alarm signal circuit—a flashing red light and a horn.



CABINET GORGE DAM will fill the gap (above cofferdam) appearing in this photo by this time next year. Powerhouse will be constructed on bench at base of cliff at the left.

Fast Schedule for Cabinet Gorge Dam

TIME is the controlling factor in construction of the $40 million Cabinet Gorge Dam and powerhouse. The 200,000 kw of new generating capacity is badly needed in the power-short Pacific Northwest (ENR Oct. 18, 1951, p 128); Washington Water Power Co. wants to take advantage of fast amortization (for tax purposes) permitted by certification of the job as a defense project.

Fast construction schedules will also reduce over-all cost of the project. Interest charges will be reduced since borrowed money won't be tied up for a long period of time. Of even greater importance, diversion tunnels and cofferdams need be built only for use in low-flow times of the year.

The project is expected to be ready to deliver power ahead of any other public or private project now building.

Cabinet Gorge Dam is located on the Clark Fork River some 10 miles above Lake Pend Oreille in northern Idaho. The dam, a variable-radius concrete arch structure, 192 ft high, will plug a narrow Z-shaped gorge. Penstock and diversion tunnels pierce a solid rock peninsula formed by the gorge.

Diversion was accomplished in August. Completion of the cofferdams, dewatering the site, and excavating to bedrock blocked first major concrete pouring until November 15. That has left no alternate but to work through the winter so that a substantial amount of concrete will be in before flood season in the spring of '52.

Such wintertime construction will be expensive: Aggregate must be heated and poured concrete kept from freezing. However, it will be less expensive than constructing the diversion tunnels and cofferdams to control a substantial flood. Mean annual flow in the Clark Fork is 18,410 cfs, but flood flows that usually occur in March or April range up to 126,000 cfs.

The contractors are attempting to get the dam up to el 2080 (about half its height) and to have the base portion of the powerhouse, including draft tubes, in place before floods come next year. The first generating unit is to be on the line for trial operations by Sept. 1, 1952.

• **Many tunnels**—The project is notable for the total of ten tunnels that are to be driven. Seven of these are major and three are minor. Included are two diversion tunnels, each 1,100 ft long and 29-ft (horseshoe) dia; four 27-ft dia penstock tunnels ranging in length from 430 ft to 546 ft; a 300-ft powerhouse access tunnel; a 400-ft, 9-ft dia ice sluice tunnel; and two minor tunnels for access between the dam and powerhouse.

Tunnel excavation methods are not too unusual. A rubber tire-mounted jumbo is used for drilling (waterhead drills). Excavation is done by a pair of job-built electrically powered overshot muckers that were mounted on tractor frames.

In spite of a 30% grade, penstock tunnels were excavated from the upstream side so as to minimize interfer-

ence with powerhouse construction. Loaded trucks were pulled up the steep grade of the tunnel by other trucks operating on the flat at the portal.

Most ticklish tunnel work will be driving the powerhouse access tunnel. A rock thickness of only 12 to 15 ft will exist between the invert of the access tunnel and the arch of each diversion tunnel. No additional reinforcing to carry the 80- or 90-ton powerhouse loads is anticipated.

• **Spectacular cofferdam**—The Clark Fork was diverted through the diversion tunnels by a spectacular single blast that knocked 60,000 cu yd of rock from a 200-ft-high cliff into the river. The blast was the result of shooting 65,000 lb of dynamite loaded in coyote holes drilled from the top of the cliff and plugged with concrete.

This single blast served to turn the river flow. It permitted construction of an additional upstream cofferdam as well as the downstream cofferdam in still water.

Even after construction of the clay-and-rock-fill cofferdams, considerable difficulty was encountered in dewatering the site. A sheetpile cutoff wall was driven in the downstream cofferdam but seemed to be of little help. Pumping at the rate of 55,000 gpm for 2 weeks did not lower the water level. Additional pumps were installed, increasing the capacity to 130,000 gpm.

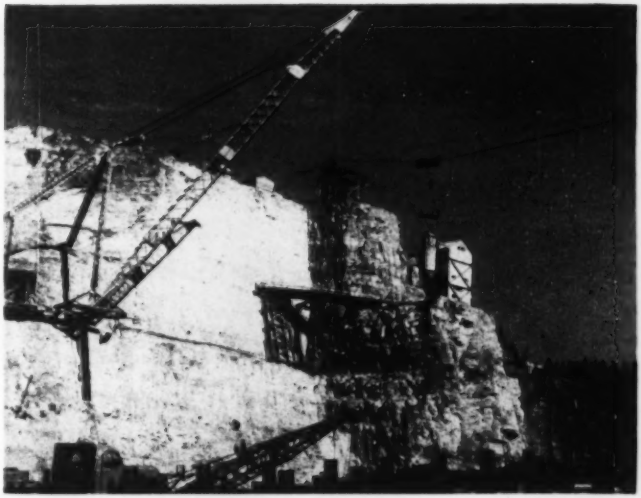
Finally, Bentonite was pumped into the downstream cofferdam through holes drilled from the top. This plugged the voids enough so the pumps could keep up with the inflow.

• **Concrete placing**—The 600-ft-long, 192-ft-high arch dam only contains 82,000 cu yd of concrete. Maximum thickness is 35 ft. It will be poured in blocks 40 ft long, ranging from 25 to 35 ft thick. Construction joints will be protected by cutoff seals both up and downstream. These joints will be grouted.

A five- to six-sack mix will be used to obtain better than 4,000-psi concrete at 28 days. Only additive used is an air entraining admixture. Its purpose is to improve placeability and to add greater resistance to freezing and thawing.

Aggregate is graded in four sizes, largest being 3 in. A natural well-graded aggregate supply is available with no crushing required. However, it contains 1½ to 2% of rotten rock that is eliminated by hand picking on conveyor belts at the aggregate plant.

The contractor is attempting to complete aggregate production before winter sets in. Rock will be stored in bins near the concrete plant where steam lines will keep the rock warm.



STIFF LEG DERRICK will place all powerhouse concrete with mix coming from plant in buckets on flatcars hauled by dinkey on trestle (center). Cableway with stationary head and tail towers will place almost all of the concrete for the thin, variable radius arch dam. Work will continue through the winter.

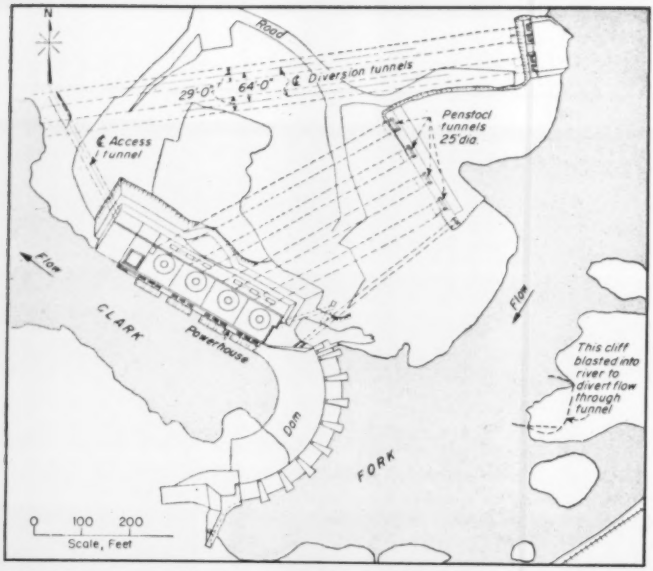
AGGREGATE PLANT must produce enough gravel to stockpile for wintertime use when hauling becomes impractical. The finished product is hauled to covered bins near the mixing plant where steam pipes will keep aggregate supply fit for winter use.

Concrete for the dam will be placed from a single cableway with stationary head and tail towers. Size of the dam is small enough so that the 15-ft drift of the cableway up and downstream will be sufficient to place almost all the dam concrete.

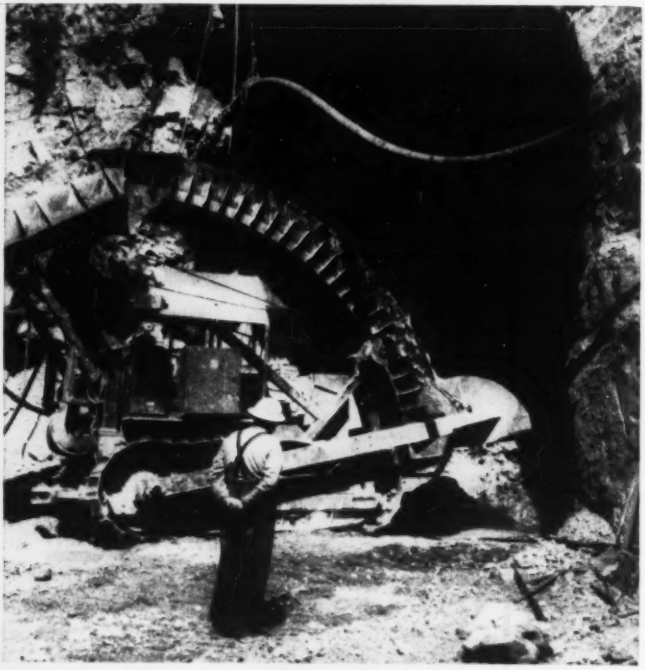
The powerhouse concrete will be placed by a stiffleg derrick that will pick full concrete buckets from a flatcar hauled onto a trestle by a dinkey engine.

Winter concrete heating will be accomplished by steam under tarps during the curing period and by salamanders and pots during pouring.

• **Powerhouse**—The 50,000-kw generators will each be driven by 70,500-hp



DAM PLUGS narrow Z-shaped gorge on Clark Fork in northern Idaho. Penstock and diversion tunnels cut through high rock formation on one part of S. Powerhouse access will be by tunnel.



JOB-MADE OVERSHOT MUCKER excavates seven major tunnels. Rig is made by mounting 100-hp electric motor on tractor frame in place of normal diesel engine. Rig can be reconverted to regular diesel tractor when job is completed.

Kaplan turbines. Three of these turbines will be of the fixed blade type and one of the adjustable blade type.

Fixed-blade turbines are less expensive than adjustable blade turbines but they have a definite peak in their efficiency curve. Since upstream regulation will keep the head on the power plant relatively constant, fixed blade turbines are economical at Cabinet Gorge. The one adjustable blade turbine is available to take fractional loads since it can operate more efficiently on a variable head.

Improved storage upstream developed by Hungry Horse Dam has helped greatly in making Cabinet Gorge feasible. Also upstream from Cabinet Gorge is Flathead Lake which serves a powerhouse of the Montana Power Co. Plans are underway for two additional installations between Cabinet Gorge and Flathead Lake, one by Washington Water Power and one by the Montana Power Co.

Contractor for Cabinet Gorge Dam is Morrison-Knudsen Co., Inc., Boise, Idaho. The dam is being built on a cost plus basis with M-K's fee for overhead and profits set at 10% of the cost. A previously agreed upon estimate sets a ceiling on the fee figure.

Project director for Morrison-Knudsen is B. "Woody" Williams. Construction superintendent is Harold Buckert and John R. Barry is administrative superintendent.

Representing the owners, Washington Water Power Co., in design and as resident engineers is Ebasco Services, Inc. Design is done in Ebasco's New York offices. B. S. Philbrick is Ebasco's project manager at Cabinet Gorge.

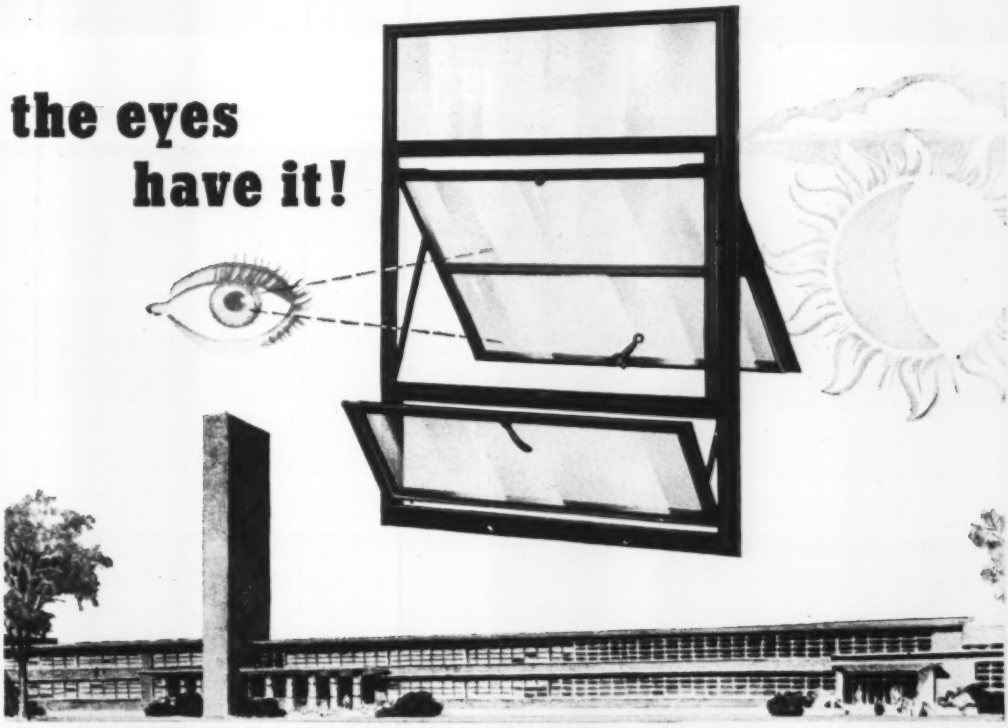
"Glaring" error costly on Arizona State building

PHOENIX—Designers of the new $500,000 Arizona State Office building are red faced this week, and figuratively speaking you could blame it on the sun's glare.

In designing the south side of the building they arranged an almost unbroken series of windows extending the buildings full length. It looked nice from the outside, but workers inside had a different opinion. With the sun moving southward now that winter is here the glare caused by the windows has made it nearly impossible to work.

As a result, 450 glass panes on the building's entire south side are being pulled out and replaced by a new type of glass that is both heat-resistent and light diffusing. It is a solution to the problem, but it is costing the sunny state of Arizona $2,500 more.

the eyes have it!



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...with CECO Metal Windows for Schools

As you read this your eyes are doing more than seeing—they are bringing into action your entire body—nerves, muscles, circulation.

And you are burning up energy—piling up fatigue in direct proportion to the amount of light available for vision. Medical science has proved eyestrain has a marked effect on the well-being of all. So it's necessary then that seeing be done with ease and in comfort. That's why proper illumination is all-important and there's where metal windows come in, for they admit more daylight than any other window.

Add to that fact, most days in most of the country are overcast in winter. Here again metal windows meet the need because only metal windows provide enough daylight for good vision on overcast days.

So there's good reason for the swing to Ceco Metal Windows in modern school construction. Besides giving more light for better sight, they permit distant vision so vital for relaxing young minds.

There are other advantages in Ceco Metal Windows—such as controlled ventilation—won't rot or warp—cost less to install, clean and maintain. And because Ceco Windows are better engineered they fit better—last longer. That's why we say—"When you use Ceco Windows you know you use the very best—you're sure of savings, too."

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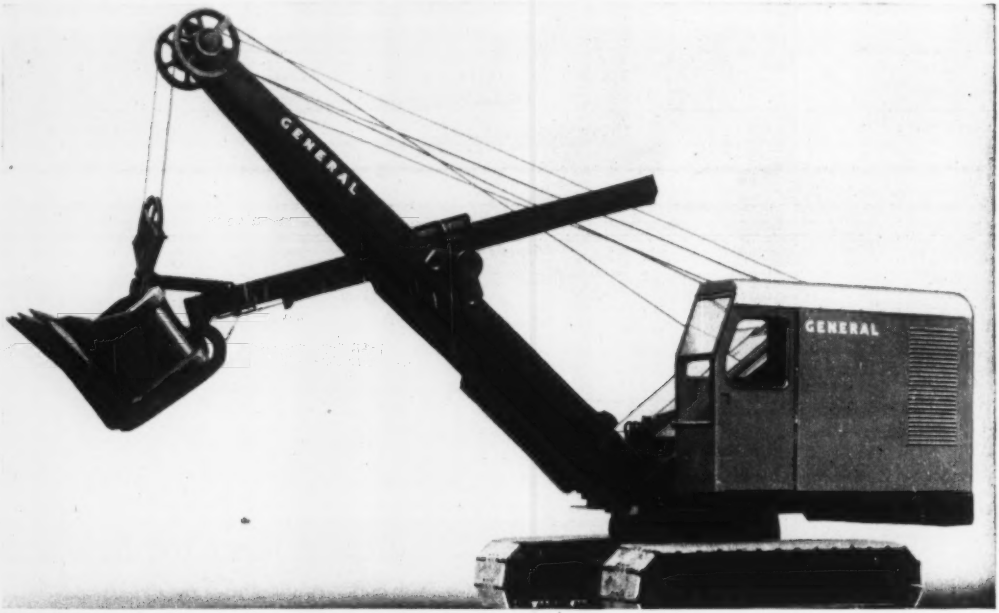

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Skyscraper gets three conditioning systems

FIRST TENANTS are now moving into a 32-story annex to the 77-story Chrysler Building in New York—at one time the world's tallest. However, they will have more luxurious accommodations than the first tenants of the former record holder, for office space throughout the new structure is air conditioned.

Three separate systems are being installed. In addition, space is provided for equipment for air conditioning a large portion of the older building.

The new skyscraper—known as Chrysler Building East—like its famed predecessor, has a structural steel frame. Floors in the lower portion are stone concrete, in the upper portion lightweight, foamed concrete. Exterior walls are brick. The first six stories are connected to the Chrysler Building.

The annex has a total floor area of 430,000 sq ft, of which 400,000 is rentable.

CHRYSLER BUILDING (left) in New York City now has a 32-story annex (right).

• **What the systems do**—Air-conditioning capacities are based on heat gain from lighting of 3 w per sq ft of floor area and heat gain from 1 person for every 100 sq ft. The three separate air-conditioning systems were designed to maintain 80F and 50% relative humidity when the outdoor dry-bulb temperature is 95F and the wet-bulb temperature 75F. During the heating season, the systems will maintain a dry-bulb temperature of 72F when the outside temperature is zero.

One system is designed to heat or cool areas within 16 ft of the outer walls of the building from the second floor up. Air under medium pressure (2½ in. of water, compared with 6 in. for high-pressure systems) will be supplied to units under the windows.

A second system is a conventional type. It will serve interior space from the second floor up.

The third system is to air condition rentable space in the basement, first floor and mezzanine. Outside-air ductwork and chilled-water piping to fan rooms have been installed. Conventional air-handling systems for the various stores will be added later.

• **Outside-air intake**—For the conventional, interior system, serving areas that are practically unaffected by sun or wind, outside-air quantities vary from a minimum of 25% to a maximum of 50% of the total air handled. The maximum will be supplied in intermediate seasons. Ducts for this system are in the corridors above a suspended ceiling.

Outside-air intakes for the installation at the bottom of the building were designed to handle up to 100% outside air during the intermediate seasons.

For the peripheral system, 100% outside air is supplied. As a result, smaller ducts can be used than for systems with recirculated air. The window units, equipped with fans, eliminate need for radiators or convectors. They also provide individual control for the outside rooms—where it is most needed.

Risers carrying outside air to these units are located alongside the columns. They are supplied from equipment rooms on the second and fourteenth floors and in the penthouse.

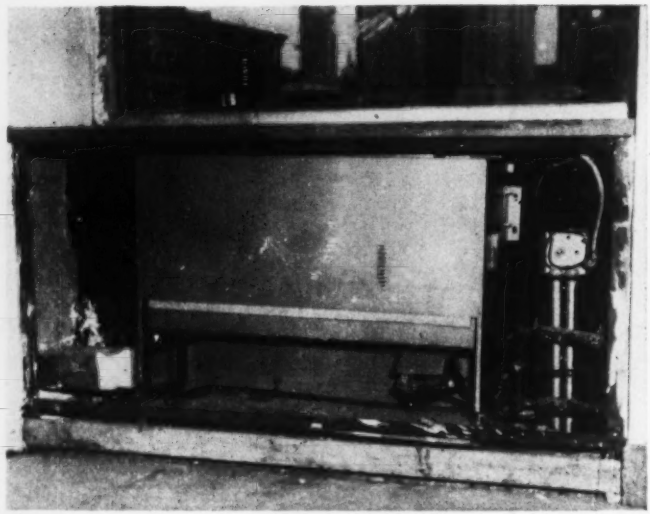
The systems will be regulated by pneumatic controls, for which compressed air will be supplied by two electric compressors. Controls are designed to take into account change in pressure when a switch is made from summer to winter operation.

• **Steam-powered equipment**—As with most large buildings in New York City, it was found more economical to purchase steam for heating and power from the New York Steam Co. than to generate it in the building. Steam is brought in at 125 to 150 psi. It is used at full pressure to run the steam turbines that drive the refrigeration compressors.

Two centrifugal compressors supply 1,400 tons of refrigeration, with Freon F-11 as the refrigerant.

Three cooling towers have been installed at the top of the structure; they can cool 1,400 gpm from 105F to 85F.

Fresh-air intake louvers for the towers are in vertical alignment with windows below and fit well into the building's architecture. Provision was made also for cooling towers of 1,700-



WINDOW UNIT (shown with cover removed) distributes air to perimeter areas in each story. At left, is the outside-air feeder. At right, is the chilled water supply and return. Supply grille is at the bottom of the unit, exhaust at the top.

ton capacity for future air conditioning of the Chrysler Building. In addition, space has been allotted in the sub-basement for future installation of two 850-ton turbine-driven compressors, capable of handling about 70% of the entire refrigeration load of the older structure.

• **No noise**—Special care was taken to eliminate noise and vibration from the air-conditioning systems. Flexible hose is used at all pump suctions and discharges, and vibration isolators are installed under all machines with moving parts. Interior casings of window units are acoustically treated.

• **Costs**—Initial cost of the three systems is about the same as or 5% higher than conventional systems, if heating and air-condition costs are combined, the designers say. But for the extra cost, tenants have individual control of temperatures with the window units, and it is possible to heat and cool at the same time in different parts of the building.

Operating costs are probably slightly higher for the three systems, because of the additional refrigeration required. The operating crew plans to make an accurate check of costs.

The heating, ventilating and air-conditioning contract was about $1,500,000. Raisler Corp. was the subcontractor. Turner Construction Co. was the general contractor.

Reinhard, Hofmeister and Walquist were the architects; Edwards and Hjorth, the structural engineers. Guy B. Panero, consulting mechanical engineer, designed the air conditioning for Chrysler Building East.

Cast-in-place concrete bridge beams prestressed

Now under construction in Texas is a 750-ft long concrete highway bridge incorporating a 59-ft prestressed span. This is the first time prestressed concrete bridge beams have been used in that state.

The bridge, on State Highway 60 in Austin County, will carry two lanes of traffic across the San Bernard River, about 40 miles west of Houston. It will have 24 reinforced concrete spans 30 ft long besides the prestressed span.

In cross section, the 30-ft beams and the 59-ft beams, which will be cast in place, will have the same shape. They will be cast in the same steel forms, two sets being used for the longer span, with a falsework support at midspan.

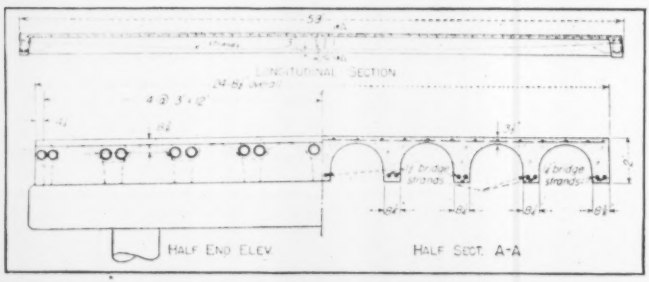
Each span consists of nine T-beams spaced 3 ft center to center of webs. The beams are 2 ft deep. Webs and flanges are curved, being cast in arched forms. Webs have a minimum thickness of 8¼ in. and flanges 3½ in.

The 30-ft beams are reinforced with four bars, a pair of No. 11 in one layer and a pair of No. 7 above.

Interior beams in the 59-ft span are prestressed with two 1¼-in. bridge strands and the outer beams with two 1¼-in. strands. These are 3 in. above the bottom surface of the beams at mid-span and curve upward to anchorages about 13 in. higher at the beam ends. The purpose of this curvature is to produce bending moments that vary throughout the span in about the same way as bending moments due to the applied loads, but opposite in sign. The strands will be anchored by jacking and tightening a nut on end fittings. Concrete is to have a minimum strength of 4,000 psi in 14 days.

A contract for constructing the bridge was awarded in August to Harry Newton, Inc. About $8,500 less than the low bid for all-concrete spans, the contract totaled $95,500. Of this, $13,500 went for approaches, leaving $82,000 for the bridge cost.

The superstructure for the 59-ft span is estimated to cost $9,900, or $168 per lin ft (bid price for strands, including plastic tubing for preventing bond with the concrete, was high—$1 per lb).



ONE SPAN of a Texas highway bridge was prestressed with bridge strands placed in the webs in a parabolic curve and anchored at the ends of the beams.

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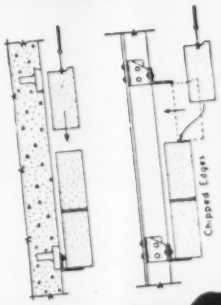

Use of Peerless Wedges permits setting of shelf angles at any time, preferably after the masonry reaches that level. This avoids having to fit stone into a space with the hazard of chipped edges.

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Cutting costs in long-span hangar design

Don W. Kirk
Structural Engineer
Pelich and Geren
Associated Architects & Engineers
Fort Worth, Texas

STRUCTURAL STEEL in the roof framing of the new hangar at the Greater Fort Worth International Airport, Texas, weighs only 8.5 lb per sq ft of roof area.

Trussed arches span 257 ft in this building. Spaced 20.5 ft on centers, they are supported on concrete A-frames, which in turn are carried on two reinforced concrete piers. The thrust of the arches is taken by a reinforced concrete tie below floor level at each frame.

A-frames are designed to carry another arched roof of equal span. Provision is also made in the design to resist the thrust due to the second set of arches should the present hangar be demolished by bombing or explosion.

Offices and shops for American Airlines, lessees, are provided along one side and across one end of the hangar in a 2-story building with 46,500-sq ft total floor area. The hangar is large enough to accommodate either two DC-6's and one Convair, or four Convairs.

A set of eight-leaf doors at the apron end permits a clear opening to the hangar of 31 ft by 216 ft 4 in. Electrically operated, the doors slide into pockets at either side of the hangar. A tail gate opening, 15 ft high by 22 ft wide, is also incorporated in this end wall.

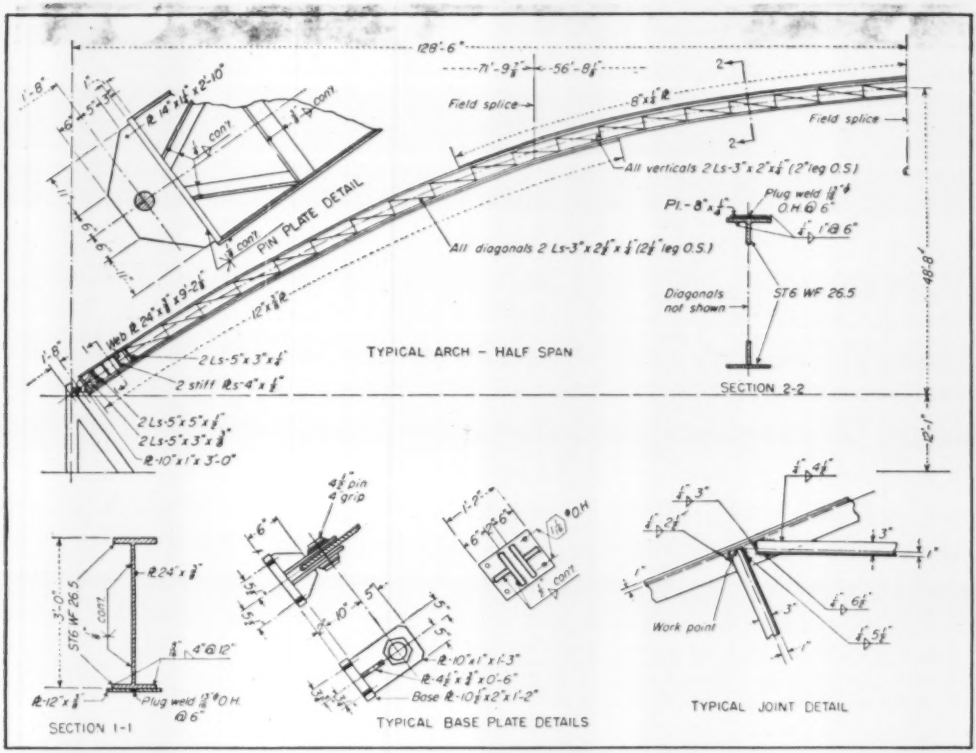
Wind loads from the doors and upper portion of the steel-siding end wall are transmitted by steel trusses to the first two arches.

The hangar will be equipped with a deluge-type sprinkling system. It will also have interior lighting that can be serviced from the ground. Piping for radiant heating is installed in the concrete floor slab.

• **Many loadings studied**—Structural steel was chosen for the roof framing after contractor's estimates made from preliminary designs showed it to be cheaper. Thin-shell concrete was included in the comparison.

Roof dead load with the steel design is small—20 psf. This is attributed to use of a lightweight insulated steel deck, welding and the advantage given by a two-hinged parabolic trussed-arch design.

Two conditions of live loading were considered: (1) 15 psf was applied on the horizontal projection of the entire span. (2) 25 psf was placed on the horizontal projection of the middle third of the span. This last condition, in combination with the dead



PARABOLIC CURVE gives the arches a rise of almost 49 ft. Arches were fabricated in four sections, erected as half arches.

load acting on the horizontal projection of the entire span, gave maximum design stresses in 80% of the members.

However, three conditions of wind loading were also considered, two of which are recommendations of American Society of Civil Engineers Subcommittee 31 (TRANSACTIONS, Vol. 105, 1940). For the first condition, a 20-psf pressure was applied on the vertical projection of the arch. For the second condition a varying suction was assumed over the entire arch —12 psf to windward, 14 psf on top, and 9 psf to leeward. And for the third condition a 20-psf pressure was placed on the vertical projection, with a 9-psf outward or suction pressure on the leeward quarter. This condition was assumed by the writer. (Due to climatic conditions snow loading was not a factor).

• **Principal roof members**—The hangar roof is supported on nine parabolic, welded trussed arches made up of structural tees, plates and angles. The arches have a constant depth of 3 ft back to back of tees and a rise of 48 ft 8 in.; with 12-ft high A-frames, clear height at center is 59 ft 3 in. A solid web section was required at the ends for shear and to distribute the pin load to the chord sections.

Each arch weighs 13.5 tons. Each was fabricated in four sections for ease of handling in shop and shipping.

The first arch was shop assembled noting the allowances needed for misfit. These allowances, or corrections, were then made in the shop jigs and the balance of the arches did not have to be shop assembled.

For the main bracing system, every third purlin—an 8 WF 17—is connected with an angle knee brace to the bottom chord of the arch. Two continuous adjacent sets of rod cross-bracing run longitudinally along each side and the center of the hangar. There is also a set of transverse bracing in each end arch panel and the two center arch panels.

• **Easy erection**—Erection of the arches was easier than expected. The first was erected in four sections as fabricated. This required three field splices to be made aloft. After that, the erector decided that the arches were stiff enough to handle as half arches, so he made the side splices on the ground.

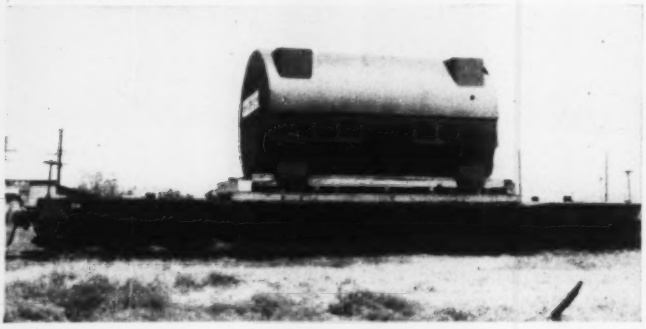
Equipment included two crawler cranes, a steel scaffolding tower and a 100-ft steel gin pole, guyed strongly. The first arch erected was lashed securely to the gin pole, which remained in place until all arches were erected and final bracing completed. The nine arches, purlins and bracing were set in twelve days.

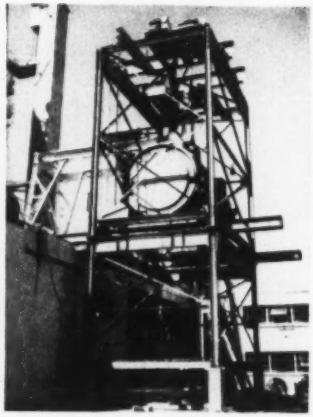
The hanger, called the Terminal Building Annex, is part of a proposed $12,000,000 development of the Greater Fort Worth International Airport, Amon Carter Field, Fort Worth, Texas. There is also a 236,000-sq ft Terminal Building under construction at present. Completion of the two structures is expected in early 1952.

Joseph R. Pelich and Preston M. Geren, Associated Architects & Engineers, designed the hangar. Thos. S. Byrne, Inc., is the general contractor. North Texas Steel Company, Inc. fabricated the steel and John F. Beasley Construction Co. erected it.

FIELD AND OFFICE

Ingenuity solves tough moving job





BIG JOBS—130-ton stator for Montana Power Co.'s plant arrives on one of the six U. S. freight cars capable of carrying it (left). Tough job was to move it from car to plant site. Then special hoisting frame (right) placed it.

Workers building the Montana Power Co.'s new steam generating plant southeast of Billings have recently completed one of the most difficult incidental chores—moving a single piece of electrical equipment that weighs 260,000 lb.

The 130-ton generator stator (66,000 kw) is so built that its great weight is concentrated in a semi-cylindrical shell only 22 ft long and 14 ft in diameter. Only six freight cars in the U.S. are capable of carrying it. Once delivered at Billings, there remained the job of hauling it a mile from the railway to the power plant site.

Earlier, a huge trailer with special tires had been used to transport a smaller 93-ton generator to the plant, but deflection of the steel beams of the trailer made it obvious that the heavier stator would be too much for the trailer.

So G. M. Jones of Ebasco Services, Inc., New York, who is superintendent of construction on the power plant, worked out this method:

He had the tractor unhitched from the trailer and a set of skids placed under the front end of the trailer. Then, two trucks with winches were used for motive power and the trailer was inched along greased planks on its front skids and rear wheels.

It took four days to cover the mile to the power plant, where a steel erector tower had been built to hoist the stator into place.

The top half of this tower, equipped with two electric hoists, could slide along ways to the place where the stator was to be lowered. The apparatus was hoisted 25 ft, moved sideways 15 ft, and lowered over the bolt holes in its permanent foundation.

UNIFORM LIGHTING—Architect Carter E. Hewitt specified expanded metal for the ceiling of an office building in Peoria, Ill., for Toledo, Peoria and Western Railroad. He considers this an attractive, economical way to hide unsightly ductwork and beams, at the same time providing diffusion of light from fluorescent fixtures, without serious light loss. Lightweight, one-piece panels of expanded metal, manufactured by Wheeling Corrugating Co., Wheeling, W. Va., are supported on a light steel framework and painted to match the interior decoration of the office.

Fan can stop freezing of chlorine in tanks

The phenomenon of chlorine cylinder or tank freezing is especially critical during emergency periods, when the rate of chlorine withdrawal is increased above normal. Due to rapid expansion of the gas, temperature may drop below freezing. If the containers happen to be less than half full, the condition becomes worse.

Under these circumstances the refrigeration effect will decrease the necessary heat transfer rate, and the result will be water or sewage underfed with chlorine, unless proper care is taken.

Usual methods of administering dried compressed air, or use of special heating units, may be replaced by a simple table-model fan. A revolving fan will produce superior results, when two or more chlorine containers are involved.

The fan should be placed near the bottom of the tanks or cylinders, so that it blows air on the lower portions of the containers.

This method prevents freezing and does not require any supervision.—A. J. Bulahanis, *Dept. of Public Works, Chicago.*

Our Defense Program Faces a Crisis

A major crisis will soon confront our defense program.

It is not a crisis in raw materials. To find enough materials, from steel to cobalt, for defense production is a serious problem. But it is one that is being solved.

It is not a crisis in manpower. Shortages of workers with special skills hamper production, but these shortages are being relieved, slowly.

It is not a crisis in manufacturing capacity. American industry's record-breaking expansion is, with very few exceptions, keeping abreast of defense needs.

The coming crisis will be one of finance. It will rise from our failure to provide the means to PAY FOR the defense program we now have under way.

A $15 Billion Deficit?

Congress has approved a defense program which is scheduled to raise *total* federal spending in the year from June, 1952, to June, 1953, to somewhere between $85 and $90 billion. Additional appropriations for more air power and atomic development, which are now proposed, would add several billion dollars.

But Congress has not approved a tax plan to match such spending. With the new levies enacted in this session, tax collections during the 1952-53 fiscal year are estimated to fall somewhere between $70 and $75 billion. That would be roughly $15 billion short of balancing the budget. If the defense program is expanded, the deficit will be that much greater.

We have not yet felt the impact of the crisis that would accompany a federal deficit of this magnitude. Federal tax collections currently are big enough to balance federal expenditures. But the defense program is scheduled to boost the annual rate of federal expenditures $25 billion in the next year.

To Meet the Crisis

By January the crisis will be clearly in sight.

Then the President will present his budget. After that, Congress must act to close the broad gap between government income and government spending. If it fails to do that, the whole defense program will be menaced by weakness in its financial foundations. That weakness might well take the form of another destructive wave of inflation.

We have three ways to meet this crisis.

The best approach, of course, is to cut unessential expenditures. That can make a real dent in the deficit. The second is to collect more

taxes. The third, and by all odds the most dangerous, is to have the federal government meet its deficit by going deeper into debt. Borrowing, which might feed inflation, can easily lead to disaster.

Near Income Tax Limits

It will not be possible to raise taxes to meet the deficit merely by increasing further the rates on corporations and on persons in the upper income brackets. Congress has about scraped the bottom of that barrel.

The Senate Finance Committee said as much in reporting this year's tax bill. The Committee reported that it had "serious doubts as to the feasibility of raising any substantial additional amounts of revenue from income tax sources." The Committee observed that recent tax legislation brings the burdens of most corporate and individual income taxpayers close to the World War II peaks, and actually carries the rates paid by many taxpayers above those peaks.

Our ramshackle federal tax system must be thoroughly overhauled in order to broaden the tax base if it is to produce more revenue—without doing much more harm than good.

The shocking fact is that no one seems ready to act along any line that might enable us to surmount the crisis.

That fact of itself aggravates the coming crisis. And next year's presidential election doesn't make it any easier to move effectively. Both parties will shrink even more than normally from backing any program that might irritate any considerable number of voters.

If we are to meet this crisis on the tax front in an orderly way, the technical work should be in progress right now. To a large extent it is being ignored.

If we are to enforce the vitally essential program of government economy, there is the same urgent need to get under way the spade work that is required.

And if—as a last miserable expedient—we decide to let the federal government drift deeper into debt, it must have a well-developed program of borrowing from individuals and other investors, such as insurance companies, rather than from the commercial banks. Borrowing from commercial banks might speedily translate the deficit into more and more price inflation. No adequate program of borrowing from savings is now in sight.

Now Is the Time

It is possible, of course, that international relations may improve sufficiently to make it safe for us to slow down the rearmament program. If that should happen, the fiscal crisis would not be so critical. But that kind of good fortune has been notably absent in recent years.

Lenin, patron saint of Communism, is quoted to the effect that to destroy a political and social system such as ours "you must debauch its money."

We shall set democracy to digging its own grave if, through our preoccupation with politics during the presidential campaign, we pave the way for further debauchery of our money.

If we really want to avert that disaster, now is the time for us to get going.

Once the crisis is full upon us, it will be too late.

McGraw-Hill Publishing Company, Inc.

A section of the drafting room . . . International Business Machines Corporation, Endicott, New York

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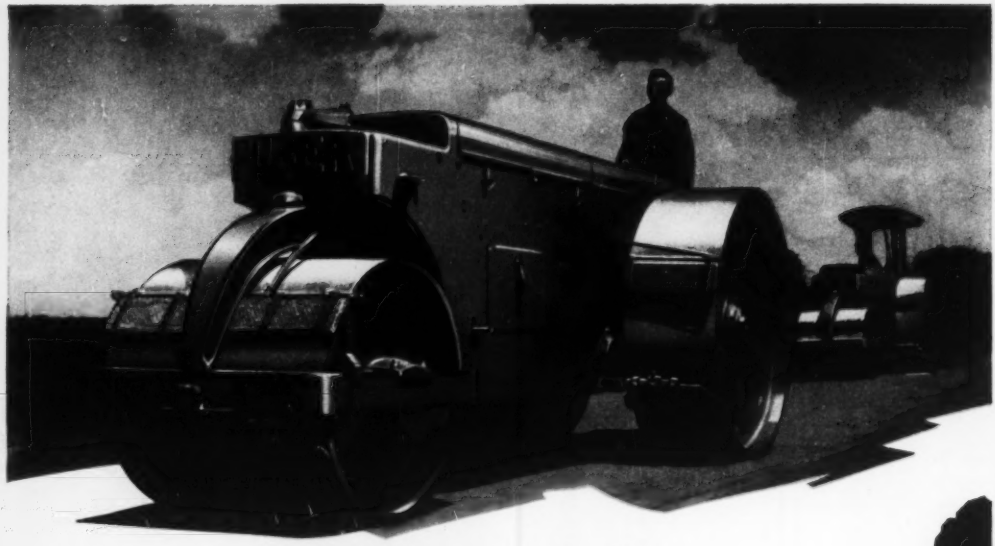
Street _____

City _____ Zone ____ State _____

Kodak
TRADE-MARK



Solve Compaction Problems

EFFICIENTLY, QUICKLY, DEPENDABLY

With

HUBER *GENERAL - PURPOSE* 3-Wheel ROLLERS

8-10-12-14 TONS • GASOLINE-DIESEL

Since Huber pioneered the "automotive-type" roller in 1923, it has led the industry in the refinement of these versatile machines. Huber has made 3-wheel rollers truly general purpose machines.

FOR GRADE WORK, the Huber 3-wheel is widely used for compaction of earthworks, embankments, sub-grades, trenches and insulation courses. These rollers usually are equipped with 18" face rolls on the 8-ton units, and 20" face rolls on the 10, 12, 14 ton sizes to gain maximum compaction per lineal inch.

FOR FINISHING, Huber 3-wheel rollers normally are equipped with the wide face rear rolls where high compression per lineal inch is not required and the wider rolling width is desirable. They are in wide use for rolling water bound macadam, surface treatment, sheet asphalt and ahead of tandems on asphaltic concrete and other bituminous mixtures.

For more information about Huber GENERAL PURPOSE 3-wheel rollers, ask for our new 20-page bulletin, No. H-150.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.

Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers

HUBER

India begins construction of its first prestressed concrete road bridge

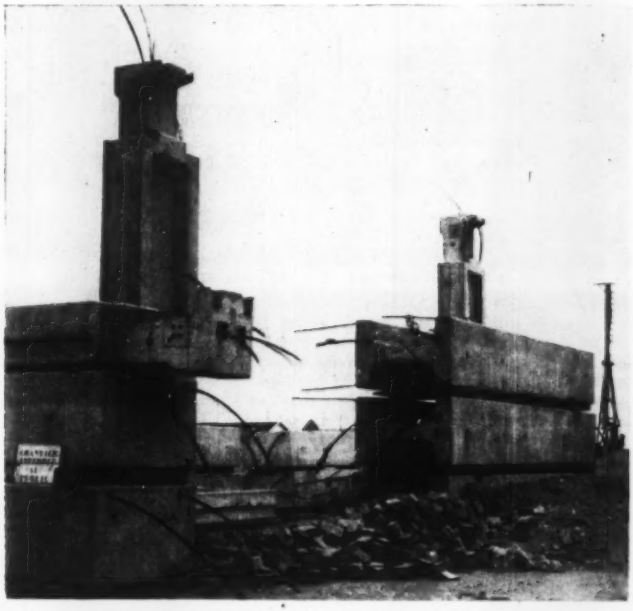
The foundation stone was recently laid of what will be the first prestressed concrete road bridge in India and perhaps the longest multispan prestressed concrete highway bridge in the world. It is in Madras State at the crossing of the River Palar and the Bombay-Madras Trunk Road.

The bridge consists of 23 spans of 90 ft (clear) and is designed for the "AA" class loading—70 tons. Financed by the government of India, it is expected to cost about $4,100,000.

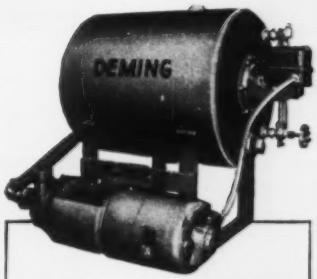
The foundations are to consist of two 12-ft external diameter circular wells under each pier. The piers will be of mass concrete with plum stones, 7 ft wide at base tapering to 6 ft at the top. The wells are being sunk through sand to meet rock or hard clay at a maximum estimated depth of 46 ft. The superstructure will consist of four U-shaped prefabricated prestressed concrete girders with fixed bearings at one end and concrete rocker bearings at the other. Transverse diaphragms will be placed at intervals of 9 ft and they will be 6 in. thick, end blocks 58 in. long.

The prestressing of each beam will be done by eight cables, each consisting of 52 high tensile steel wires of 0.200 in. diameter. Four cables will be straight immediately over the bottom flange and the other four will slope upwards from the third diaphragm. The cables, threaded through the diaphragms and end blocks, will be prestressed by Magnel-Blaton jacks and anchored at the ends over distribution plates by means of sandwiched plates separated on the steel shims. The concrete for the beam will be of a nominal mix of 1 : 1½ : 3 with a crushing strength of 6,000 lb. psi in 28 days. Concrete in deck slab and in situ diaphragm will be 1:2:4.

(Continued on page 52)



BIG PIECES FOR BIG TERMINAL—Ocean liners, two of them end to end, will be able to tie up at the new Gare Maritime in Le Havre. Framing for the 40-ft high, 1900 x 167-ft structure is being assembled from these big precast, prestressed columns and beams manufactured in a plant up the Seine River at Rouen. During erection, beam pieces are threaded on cables, which are prestressed in the field. Freight will come in at ground level, passengers above. The Freyssinet prestressing method is being used. Urbain Cassan is the architect.

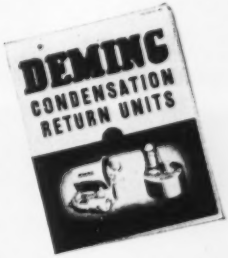


NEW DEMING CONDENSATION RETURN UNITS

Designed to return the condensate from steam coils, radiators or steam operated equipment back to the boiler, the new units have the Modern Deming "MOTOR-MOUNT" Centrifugal Pumps.

Pump motor has standard NEMA type "C" mounting flange and is furnished for single phase, two or three phase, or direct current, as specified. Pump is mounted on legs of tank so that no base is required.

Single Units and Duplex Units in a wide range of sizes meet requirements from 2,000 to 40,000 square feet of radiation.



Write for BULLETIN No. 4400 which includes performance tables of capacities, pressures and other information on Deming Condensation Return Units.

THE DEMING COMPANY
536 BROADWAY • SALEM, OHIO

SPECIFY DEMING PUMPS

What these McGraw-Hill BOOKS ON BUILDING bring you . . .

Underwood's
HOUSE CONSTRUCTION COSTS

takes up all phases of building a house, telling how to determine unit costs for every operation—a method applicable to all designs and local price variations. Includes structural details; compares all methods of estimating; covers drilling for wells, installing radiant heating, etc. **By G. Underwood, 302 pages, 62 illus., $4.75.**

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gives you a vast compilation of data and methods for the most effective uses of piping . . . principles that influence the design, construction, and uses of piping systems. Covers steam power-plant piping, building heating systems, plumbing systems, refrigeration piping, hydraulic power transmission piping, refinery piping, and many others. **By Sabin Crocker, 4th Edition, 1376 pages, 763 illus., $8.50.**

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HANDBOOK OF RIGGING

In Construction and Industrial Operations condenses into one book all the tips, methods, and techniques essential to more effective practices. Deals with everyday maintenance — with the handling of heavy machinery — with the erection and demolition of smaller size structures. Covers everything from ropes, hoisting chains, and hooks to slings and ladders. **By W. E. Rossnagel, Safety Engineer, 321 pages, $4.75.**

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(enlarged Seventh Edition just published) presents the pertinent and important facts relating to more than 5000 materials to enable you to quickly get a working knowledge of the materials best suited for a particular purpose. Gives detailed information on chief characteristics, comparative data, sources, substitutes, adulterants, and uses for each material. **By George S. Brady, 7th Edition, 879 pages, 300 illus., $8.50.**

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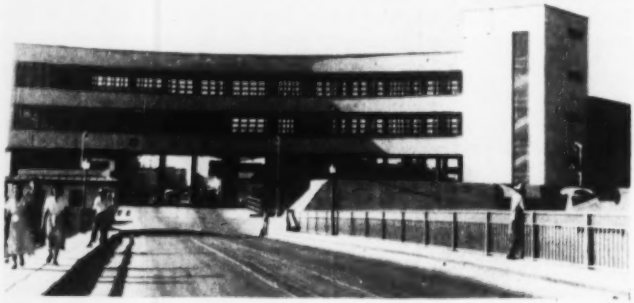
U. N. ASSEMBLY IN PARIS—As seen from the Eiffel Tower this is how the Palais De Chaillot with newly-constructed United Nations buildings in foreground, looks. This is the site of the U. N. General Assembly session now being held. The Pont D'Iena crosses the Seine River in the foreground.



WELCOME TO MEXICO—Our sister republic to the south expects more than 400,000 tourists from the United States during 1952, and it is likely that more than 10,000 cars per month will cross the border at Laredo, Tex., during the peak of the coming season. So Mexico has built the above $500,000 immigration and customs station at Nuevo Laredo just across the Rio Grande. To expedite handling the great influx of automobile traffic, there is an entrance road 11 lanes wide. The building is of red brick faced with concrete blocks. It is completely air-conditioned. The view is from the International Bridge.

A maximum compressive stress of 1,500 lb psi for concrete and a maximum tensile stress of 1,400,000 psi for tensile steel wire have been assumed while the loss, after the creep in concrete and steel and the shrinkage in concrete have taken place, is assumed as 15 percent.

A full-size beam will be tested to destruction to demonstrate the conservation margin of safety and the behavior of the girder under working and breaking loads.

The work is being carried out by Ravalaseema Constructions, the Magnel-Blaton licencees for South India.

International Briefs

• **New role for autobahns**—Hitler's superhighways built to facilitate invasion of Germany's neighbors are now being extended to promote peacetime trade and travel. Highway planners say the autobahns will form the central spokes of the projected 30,000-mile European highway network

(*Continued on page 54*)

Extra-Tough!

...more original miles—more recaps!

America's specialized truck operators report:

"First tire we ever had with a carcass strong enough to master the toughest combination on-and-off-the-road work." The new U. S. Royal Fleetmaster is *job-fitted* to your exact requirements—*gripping penetration* and *traction off the road* when you need it; *smooth-rolling, non-skid mileage on the highway* when you want it!

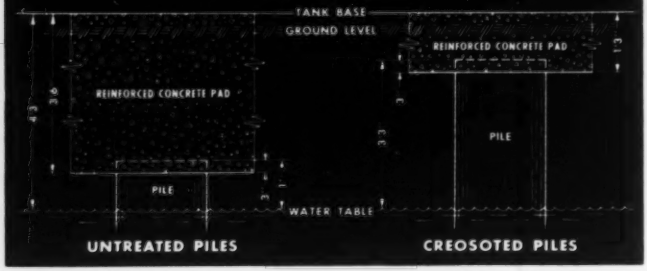
Here's What Does It:

- ★ *70% deeper traction tread!*
- ★ *Tougher, stronger carcass! (More Recaps)*
- ★ *Job-Fitted tread compounds!*
- ★ *Thicker under-tread!*
- ★ *Round-molded to the tire's inflated shape to reduce distortion stress and strain!*

You can get all the facts about the new Fleetmaster from your nearest U. S. Royal Dealer. **A phone call does it!** He's listed in the Classified Telephone Book.

UNITED STATES RUBBER COMPANY

Alternate methods of supporting large storage tanks



$33,000 SAVED by Founding 6 Tanks on Koppers Creosoted Piles!

AT THE Williams Plant in Port Arthur, Texas, foundations were recently installed for six large storage tanks. These tanks are on ground that is slightly above the permanent water table. Under such conditions it is common practice to use *untreated* timber piles for foundations.

But *untreated* piles, as shown above, may require a *thick* pad of concrete—and that runs into real money. This thickness of concrete may be necessary because untreated piles cannot be cut off any higher than one foot above the permanent water table; otherwise they are vulnerable to decay and insect attack.

Koppers *Creosoted* Piles, on the other hand, are fully protected against decay and insects . . . they can be cut off *at any point above the permanent water table*. A thinner pad of concrete is all that's needed—and the costs are much lower.

That's why the Williams' tanks were founded on Koppers Creosoted Piles. The estimated savings in material and labor, based on Gulf Coast prices, are set forth below. These figures cover all six storage tanks—five tanks with a capacity of 500,000 gallons each, and one tank with a capacity of 1,500,000 gallons.

Comparative Costs

UNTREATED PILES		CREOSOTED PILES
1,479	Number of Piles	1,320
35'	Length of Piles	35'
2,610	Cu. Yds. of Concrete	930
3'6"	Pad Thickness	1'3"
61.95	Tons of Reinforcing Rod	61.95
1,930	Cu. Yds. of Excavation	432
$180,850	Total Cost	$147,338

$180,850
147,338
Savings—$33,512

Use of untreated piles in this case would have increased foundation costs by 22.7%

Pressure-creosoted piles are now accepted in most modern building codes for permanent construction. Write for further information and quotations.

KOPPERS COMPANY, INC., PITTSBURGH 19, PA.

KOPPERS PRESSURE-TREATED WOOD

International . . .

planned by the United Nations Economic Commission.

• **Water exploration in Chile**—The International Bank for Reconstruction and Development has made a loan of $1,300,000 for the exploration and use of underground water resources of the Rio Elqui Valley in Chile to the Corporacion de Fomento de la Produccion. The valley is 250 miles north of Santiago and has about 50,600 acres of cultivable land, most of which is now served by irrigation canals. Due to the uncertainty of water supply, about 10,000 of these acres are not cultivated even in good years. Records of the last 23 years show that in one year out of three on the average, and once for as many as five years in succession, the water available was insufficient even for the 40,000 acres regularly under cultivation.

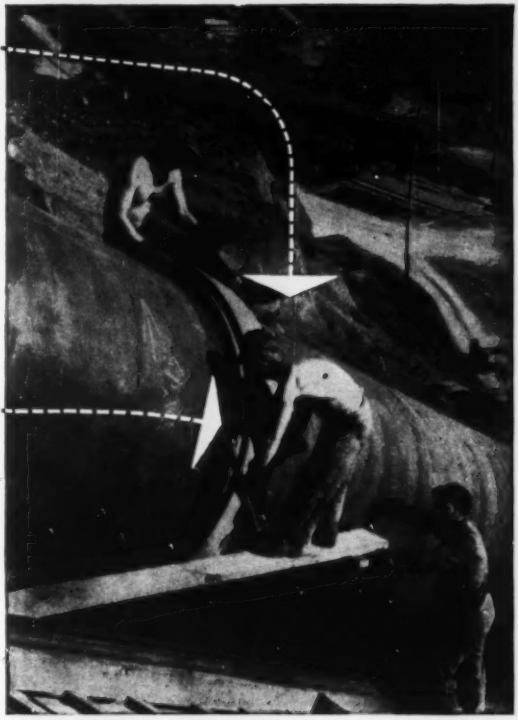
• **Auckland sewers**—The Metropolitan Drainage Board of Auckland, New Zealand, will shortly be commencing a program of works costing over 5,000,000 pounds. The approved scheme provides for construction of main sewers, sewage and trade waste treatment plants, and sea outfalls. The first contract will be advertised in January and will be for some 32,000 ft of sewers in tunnel, partly about 7 ft. 3 in. horseshoe section and partly about 4 ft. 6 in. by 2 ft. 3 in. section, together with about 1,000 ft of traffic tunnel. The second contract will be for a submarine sewer tunnel about 5,000 ft. long, a sea outfall about 2,000 ft. long (8 ft. dia. pipes) and other works. Following this will be contracts for considerable extra length of sewers and for treatment plants to handle 30 mgd.

• **Canadian federal roads**—All interprovincial and international highway traffic in Canada is under the jurisdiction of the federal Parliament of the Dominion, according to a ruling handed down Oct. 22, by the Supreme Court of Canada in a judgment on a test case. The case related to the right of a U. S. bus line to pick up or set down passengers in the province of New Brunswick in trips from Maine to Nova Scotia. The Supreme Court justices ruled that the provinces have no power to interfere with such highway traffic which is not strictly local, originating within the province. The ruling is the first of its kind in Canadian constitutional history and is likely to have important effects upon interprovincial and international trucking practices.

Speed the scrap—Speed the steel

from penstocks to water mains . . .

Dresser Couplings absorb pipe movement, prevent built-up stresses, speed construction

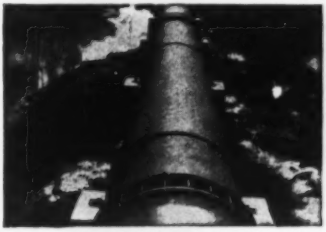


On either exposed or buried lines, from ⅜″ to 72″ diameter or larger, your best protection against vibration or movement stresses is a Dresser Coupling. Each of these "flexible-tight" joints takes up to ⅜″ expansion-contraction movement . . . up to 4° deflection . . . cushions your line at every joint. Specially compounded rubber gaskets soak up vibration like a sponge.

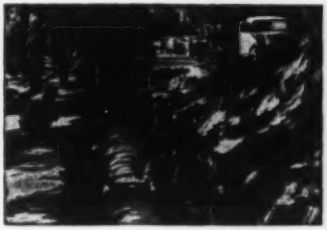
Installation of Dresser Couplings is simplicity itself. Any workman can install them; the only tool needed is a wrench. And fast? On a typical 48″ water line, 40 lengths of pipe were laid in one 8-hour day using a two-man joining crew.

Performance on half a million miles of pipe proves Dresser dependability.

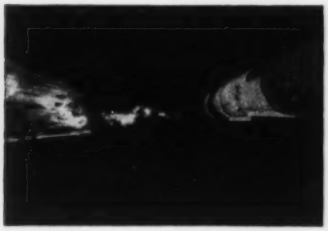
75″ penstock of the British Columbia Electric Co. One of three installed at Bridge River, using Dresser Couplings specially designed for the job. With Dressers, construction time was cut from months to weeks, due to simplicity of installation. And penstocks have remained bottle-tight under very high pressures, despite severe weather conditions.



Over swamps and marshy ground, where earth movement must be considered, Dresser Couplings keep Savannah's, new 14-mile, 42″ water supply artery completely tight.



In busy streets of Stoneham, Mass., simplicity and ease of installing Dresser Couplings gets the job finished sooner. Dressers absorb traffic vibrations.



Under New York Harbor, construction of the Brooklyn Battery tunnel was simplified by using Dresser Couplings to join air and water supply lines.

DRESSER

"FLEXIBLE-TIGHT"

COUPLINGS

Dresser Manufacturing Division, 319 Fisher Ave., Bradford, Pa. (One of the Dresser Industries.)

GET THESE FOLDERS NOW!

Interesting engineering data on varied types of lines installed with Dresser Couplings. This is file material.

DRESSER MANUFACTURING DIVISION
319 Fisher Ave., Bradford, Pa.

Gentlemen: Please send me your "Report of Dresser Coupled Lines," your "Bridge River" reprint, and "Style 38" catalog.

Name_____
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Address_____
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TELSMITH EQUIPMENT FOR DAMS

TVA's Watauga Dam, Tenn. Four different types of Telsmith Crushers used on this job.

● Huge dam projects and Telsmith Aggregate Plants go together. Many dam builders call in Telsmith engineers right at the start—for consultation as to the proper plant layout and the right equipment to use. Then Telsmith makes the detailed drawings for the erection of the plant and furnishes most of the machinery. Telsmith designed plants have proven their efficiency on many large projects and Telsmith equipment has a world-wide reputation for the production of low-cost aggregate. The ruggedness of Telsmith equipment is strikingly demonstrated by long life in severest service, on successive projects. After producing 1,500,000 tons of aggregate at Center Hill Dam, the same Telsmith equipment is now turning out about the same amount of aggregate at Buggs Island Dam.

Center Hill Dam, Tenn. Telsmith designed complete crushing-screening plant; and furnished most of the equipment.

Buggs Island Dam, Va. This Telsmith crushing plant also produced the aggregate for Center Hill Dam.

Save TIME and MONEY

Consult Telsmith Engineers—Ask for Bulletins 266 and 271

Norfork Dam, Ark. This 500 ton per hr. capacity combination quarry and sand and gravel plant was Telsmith designed and equipped.

Philpott Dam, Va. Here, too, the crushing-screening equipment is Telsmith.

Mount Morris, Dam, N. Y. The 300-350 tons per hour rock crushing plant is Telsmith designed and equipped.

OTHER DAMS BUILT WITH TELSMITH EQUIPMENT

- Alatoona Dam, Georgia
- Ariel Dam, Ariel, Wash.
- Boysen Dam, Shoshoni, Wyo.
- Carpenter Dam, Arkansas
- Cascade Dam, Washington
- Clark Hill Dam, Augusta, Ga.
- Conowingo Dam, Conowingo, Md.
- Dale Hollow Dam, Tennessee
- Davis Dam, Nevada
- El Presidente Dam, Mexico
- Fort Gibson Dam, Oklahoma
- Grand Coulee Dam, Washington
- Kortes Dam, Wyoming
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SMALL CITY WITH BIG PROBLEMS—This is Wooster from the air. One of its biggest problems was to get a better water supply for fast-growing needs. Now it has solved that problem.

Wooster, Ohio, gets a water plant

The problem in Wooster, Ohio, is one not uncommon to many towns of its size throughout the United States—but one that the conservative, God-fearing fathers of the town would have frowned upon.

The city was growing. Not rapidly—conservatively would be a better word for this wealthy farm-area market town—but uncomfortably. The 1940 census gave the city a population of about 11,000. The 1950 census revealed a population of about 15,000.

What has brought the growth is industry—little, diversified industry. A potato chip factory; a truck body plant; two small rubber companies; a ladder manufacturer; soya bean processing; a paint company, and others. Each brought a small payroll—each brought people, some brought special problems (the potato chip factory had to install its own primary sewage treatment plant to keep starches out of the city's sewage treatment plant).

• **Gotta have water**—What it added up to (in addition to housing, streets and the like) was a demand for much more water—perhaps twice what the city could supply.

The answer has been a 2-year, $900,000 program (now nearly completed) that has doubled the capacity of the city's filtration and softening plants to about 4 mgd, and strengthening and enlarging the distribution system.

Included in the work, according to City Engineer Harold Slater, are five new wells, two rapid-sand filters, a 400,000-gal clearwell, complete new storage and chemical feeding apparatus (the underground supply is plentiful but hard); a vertical flow settling tank; a standby natural-gas-driven generator; a new booster station, as the north end of town is higher than the rest; a 500,000-gal elevated tank; three miles of pipelines (12- and 16-in). Jones, Henry & Schoonmaker, Toledo, are consultants.

• **Surprise**—Need for such new facilities—as well as other engineering matters such as 134,190 yards of blacktop street repairs to the rough red-brick streets—has come slowly to the town fathers, though long foreseen by engineers and others.

Center and seat of Wayne County—one of the richest farming areas in the United States—and site of a Presbyterian church-founded Wooster College, Wooster is inclined to be conservative in what it does and what it plans, leaving shining plans for a great future to its larger neighbors—Canton, Mansfield, Akron, Cleveland.

Because of its rich agricultural background, the town has a remarkably large business area—but there hasn't been a new downtown store building built in years. Most of the stores are excellent, but home-owned—there are remarkably few chain stores in the city.

Until fairly recently, say old residents, there was almost no industry in Wooster other than those depending on the farm community, and the stores. But since the war, the fortunate location, low tax rate, industrious, sober workers available, an abundant water supply, have attracted industry.

• **Not only problem**—Of course, water supply isn't the only problem. In his dark office in the city hall, (built in 1878 as an opera-house, and graced in front rather startlingly by a pair of stone dachsunds), Slater and his assistant, R. R. Hollopeter, have many of the usual problems of small cities: Parking, traffic, street paving, sewage disposal.

Because it is a market town, parking is a serious problem for Wooster, and city officials have taken a number of steps to help: Elimination of angle-parking through the business area; installation of parking meters; establishment of four city-owned parking lots, and plans for a fifth; introduction of one-way streets.

The town has many brick streets—built years ago because brick was the most available hard-surfacing, and to support the huge Ohio brick industry.

But the brick—perfectly satisfactory in its early use, doesn't stand up well under the tremendous pounding of the heavy traffic that pours through the city since five major state and federal highways cross the city. It gets rough and even dangerous.

So, slowly, the city is covering its brick with blacktop, doing its best with limited funds and trying not to block traffic.

Eventual solution, say the city's engineers—and in this they are backed by county Engineer Walter H. Metzler—will have to be re-routing of the major highways around the town, or at least around the business district. Another eventual solution may be re-surfacing of major routes with concrete.

• **Psychology**—One result, incidentally, of the elimination of angle-parking has been a lessening of jay-walking, and a most religious observance of traffic signals by pedestrians. Engineers think that a bit of human psychology enters into it:

Previously, only two lanes of traffic were possible on most streets, and pedestrians felt sheltered by the parked cars for more than half the distance across the busiest street.

But now, with four lanes of traffic opposing them, and without the shelter of the parked cars, pedestrians seem to think twice about darting out into the heavily-travelled highways.

• **Other matters**—The city's sewage-disposal problem—not serious at the moment but likely to become so—is complicated by the fact that, like some other communities of its size, Wooster has no zoning ordinances. Result is

(*Continued on page 61*)

CONSOLIDATED FREIGHTWAYS INC.
PORTLAND 8 OREGON
"With such laboratory proof at hand, it is our conclusion that the use of transmission oil filters should materially extend the life of transmission gears and bearings."
Superintendent of Maintenance
FREIGHTWAYS

Consolidated Freightways, Portland, Oregon, *road-tested* Transmission Gear Oil Filters before installing them on all unit and auxiliary transmissions in their fleet. And here is what the road-test, combined with laboratory tests, *proved:*

On one test, transmission gear oil in a Fuller 4B86 Transmission was sampled after 23,198 miles of service when the Fuller Transmission Gear Oil Filter was installed . . . 33,603 miles later, the same oil was again sampled and "laboratory analysis proved that the oil that had accumulated the higher mileage, was much less contaminated with foreign material than when the filter was installed."

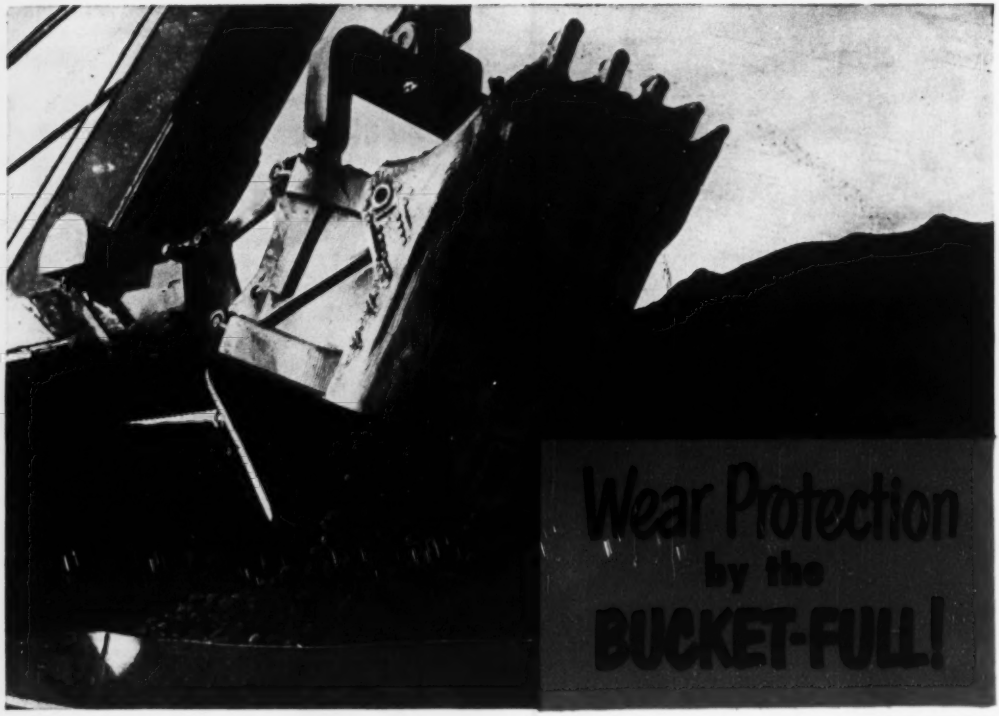
That's why Mr. Ogden is enthusiastic about filters for transmission gear oil. He has proof that here is a way to prolong the life of bushings and bearings.

*List price subject to change without notice

In the Fuller Transmission Gear Oil Filter, normal pressure of rotating gears forces the oil through a cleansing filter and returns it to the gear box. Filter element is replaceable. Unit quickly installed on Fuller Transmissions and most other makes over power take-off opening. And, you pay only $6.95 List* for a Fuller Transmission Gear Oil Filter to protect you against unnecessary down-time and resultant expense.

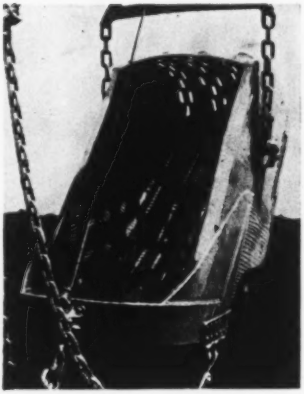
FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO 13F, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wis. • WESTERN DISTRICT OFFICE (SALES & SERVICE—BOTH DIVISIONS), 1060 E. 11th Street, Oakland 6, Calif.



Protect bucket lips, teeth, bucket sides and bottom with Stoody Self-Hardening 21! A few stringer beads as cross-hatches do the trick on large areas. Combine stringers and solid deposits at concentrated wear points. Stoody Self-Hardening 21 provides excellent wear resistance, goes on fast and easy and makes heavy deposits in one pass. For these reasons *and because it's economically priced,* Stoody Self-Hardening 21 is the ideal rod for heavy-impact, severe-abrasion. See your Stoody Dealer—600 in the U. S. and Canada—or write for complete welding procedures.

STOODY COMPANY
11976 E. SLAUSON AVENUE, WHITTIER, CALIFORNIA



APPLICATION: Apply Stoody Self-Hardening 21 to dipper teeth on all sides 2" up from point. Extend stringers of Self-Hardening 21 up the balance of each tooth. Where abrasion is unusually severe but impact only moderate substitute Tube Borium for Self-Hardening 21 deposits on the point.

STOODY

SELF-HARDENING 21

Municipal . . .

that much of the new housing growth is going into Plum Creek Valley, north and east of the city—and over a low ridge from the main trunk sewer. This eventually may necessitate a pumping station to lift sewage over the ridge into the existing system.

Another lack is a building code. Other than plumbing and electrical wiring requirements, and some requirements covering new structures in the business section, the city has no building code at all—and no way to regulate new construction as to type, setback, materials or the like.

Trouble again is the conservative nature of the town's background—a hard-headed, live-and-let-live, don't-bother-me-too-much background, that is the basis for consistent voting down of attempts at such regulation.

Port development agency established in Buffalo

BUFFALO, N. Y.—Mayor Joseph Mruk signed a local law establishing for the first time in the city's history a permanent agency, the Division of Port. The new agency will handle all matters relating to the Port of Buffalo improvement.

The next step in effectuating the new agency will be the appointment of seven members to serve on the board. The board members will be appointed for terms of one, two, three, four, five, six and seven years. Thereafter, as the term of a board member expires, the new appointments will all be for terms of seven years.

The new law requires that no more than four members of the board will be of the same political affiliation. The chairman of the board will be designated by the mayor, and the board will select an executive director and fix his salary, as well as those of any other personnel who may be required.

Board members will receive no compensation, and their appointments will be subject to confirmation by the common council.

Municipal briefs . . .

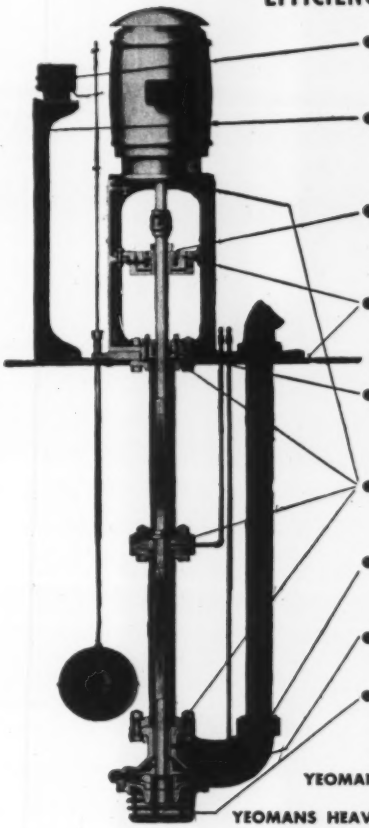
• **Tampa's sewage disposal**—In the next few weeks the new sewage disposal system of Tampa, Fla., will go into operation. There are 147 miles of pipes, several pump stations, and a treatment plant of 36,000,000 gpd. It has been financed by bond issues of $12,000,000.

Is there any scrap napping on your job?

(Continued on page 62)

Only YEOMANS Vertical Wet Pit PUMPS

HAVE *all* THESE FEATURES ESSENTIAL TO HIGHEST EFFICIENCY AND LONGEST LIFE



- **MAGNETIC STARTER STANDARD**
  —*only* effective protection against both overload and undervoltage
- **FLOAT RIG WITH HIGH STAND STANDARD**
  —float control above splash level; float travel adjustment above floor plate for greatest accessibility
- **ADJUSTABLE BALL THRUST BEARING**
  —makes for easy adjustment of impeller clearance and for easy assembly and adjustment after repairs
- **THRUST BEARING ABOVE FLOOR PLATE**
  —prevents submergence of bearing; eliminates possibility of moisture entering bearing through suspension pipe
- **STUFFING BOX AT FLOOR PLATE**
  —prevents escape of gases, moisture or vapors from suspension pipe; most effective type of construction.
- **TONGUE AND GROOVE CONSTRUCTION**
  —essential to proper alignment of rotating parts
- **FLEXIBLE JOINT AT CASING DISCHARGE ELBOW**
  —prevents strain in pump assembly, much more efficient than rigid joints
- **ENCLOSED IMPELLER**
  —assures longer life and uniform high efficiency; better design—costs more
- **CAST IRON STRAINER (ON BILGE PUMPS)**
  —longer life than mesh or galvanized steel

YEOMANS HEAVY DUTY BILGE PUMP *for wastes free from solids*

YEOMANS HEAVY DUTY SCREENLESS EJECTOR *for wastes containing solids*

Most important "exclusive" of all is the sturdy name Yeomans—best of guarantees as to fine workmanship, sound engineering and rugged construction for continuous heavy duty.

Helpful bulletins and engineering data sheets will be valuable in selecting the pump best suited to your requirements. Send for them—and preferably attach details concerning the job:

USE THE COUPON

YEOMANS PUMPS

YEOMANS BROTHERS COMPANY
1445 North Dayton Street
Chicago 22, Illinois

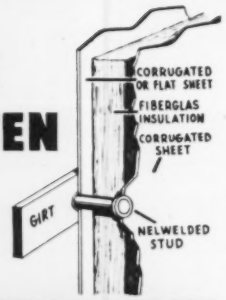
Please send literature on ☐ Bilge Pumps, Series 3000 ☐ Screenless Ejectors, Series 8000

Name_____

Firm_____

Address_____ City_____ State_____

New BETTER WAY TO FASTEN CURTAIN WALLS



SOUNDER CONSTRUCTION NEATER APPEARANCE WITH NELWELD METHOD

1 in a split second, a Nelson granular flux-filled stud is end-welded to the girt with the Nelwelding gun. Only one type and size stud is required.

2 Inner sheet (corrugated or flat) is impaled over stud rivet extensions.

3 Insulation is quickly installed by impaling it over studs.

4 Outer corrugated sheet is impaled over stud rivet extensions and secured by riveting over burrs placed on stud extensions.

When planning curtain wall, or sandwich type, construction, it will pay you to investigate and specify the Nelweld method of fastening. Used on such outstanding projects as the new Fairless steel plant, Morrisville, Pa., and the Lincoln Electric building, Cleveland, this method provides these advantages:

GREATER STRENGTH—Nelwelded studs become an integral part of the structure. The drilling (and weakening) of the structural steel is eliminated.

ONE-SIDE APPLICATION—Inside scaffolding is completely eliminated. All fastening is accomplished outside the structure. Application is safer.

FINE APPEARANCE—Positive alignment of sheets is provided by the Nelweld method. In addition, there are no exposed fasteners inside the building, resulting in neat appearance and easy painting maintenance.

COST-SAVINGS—Simplicity of the Nelweld application method results in fast erection and lower installation costs.

Full information and Nelweld Engineering Service are available to show the advantages of Nelweld methods as applied to your specific construction problem. Write Dept. E-O.

Nelson construction fasteners are distributed by United States Steel Supply Co., Reynolds Metals Co., Aluminum Company of America, Johns-Manville, Philip Carey Mfg. Co., Armstrong Cork Co., Southern States Iron Roofing Co.

Nelson Approved Applicators throughout the country can bid and install your corrugated roofing and siding with the high-quality Nelweld method . . . Nelweld equipment is available for rental or purchase from Authorized Dealers.

Fasten it Better...at Less Cost, with NELWELD

NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

Municipal . . .

• **No portable traffic signals**—The California Division of Highways has turned down the use of portable traffic signals on state highways within cities. The objections include: surprise to the motorist; device might be used when or where not justified; poor visibility; obstruction in the traveled way.

• **Toronto seawall**—This city is proceeding immediately with plans to add four feet in height to the 65,000-ft-long seawall fronting Toronto Island. Leslie Allan, works commissioner, said the only delay that might be encountered would be in obtaining the 30 tons of steel required.

• **Electric grinders**—Jasper, Ind., will do away entirely with garbage collection service. Mostly a city of homes, it will give home-owners electric grinders at $75 each as a part of the program. Already 80 percent of the owners have indicated their approval of the plan by ordering grinder units. The garbage collection system has been costing the city $6,000 a year.

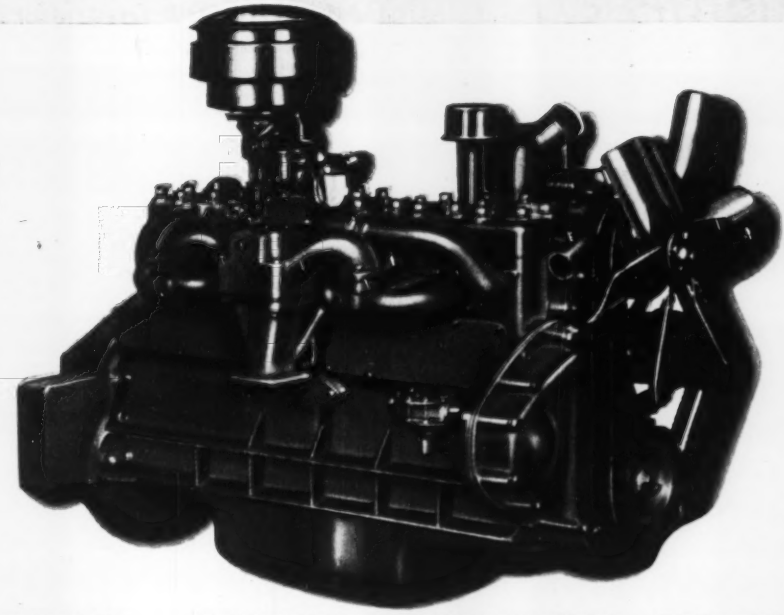
• **Baltimore port improvement**—The way has been cleared officially for the start of Baltimore's huge new port development program. The appointees to the commission have been confirmed by the Baltimore City Council, and as a start on a $30,000,000 long-range development and improvement program, $12,000,000 has been tentatively budgeted for use next year.

• **Truck by-pass**—The Delaware State Highway Department expects to start construction of a 2.7-mile by-pass around Hockessin, Del., early in 1952. The project, exclusive of right-of-way purchases, will cost around $1,300,000. It would carry the heavy truck and auto traffic flowing between the New Jersey Turnpike and Delaware Memorial Bridge and Pennsylvania. It is estimated that it will take about two years to complete the by-pass, according to Richard A. Haber, chief engineer of the Delaware State Highway Department.

• **Disposal plant enlargement**—Charlotte, N. C., has received authorization from the Water Resources Division of the National Production Authority for a $2,000,000 enlargement at the Sugaw Creek sewage disposal plant. When the addition has been completed, a new industrial waste ordinance will go into effect under which industrial plants discharging wastes into streams will be required to prepare their wastes for disposal through the municipal facilities, and a charge for the service will be made.

LET'S FACE FACTS

about Industrial Engines



CHRYSLER HAS LOWER FIRST COST

Chrysler quantity production methods have been adapted to specialized industrial engine building. As a result, you get a custom-built engine at mass-production price levels. A Chrysler engine *costs less than many other engines*, yet it's still a special engine *designed* and *engineered* for a special job.

CHRYSLER HAS LOWER MAINTENANCE COSTS

Simplified, clean construction makes *field repair easier, faster, less expensive.* Famous Chrysler engineering achievements like Superfinished Wear Surfaces, dynamically balanced shafts and Chrysler-developed steels and alloys produce parts less subject to wear *—more hours of uninterrupted service.*

CHRYSLER HAS SMOOTHER OPERATION

Because Chrysler Industrial Engines are high speed, high compression engines, they offer *smooth running power under extreme loads.* Scientifically designed combustion chambers extract the maximum power from fuels. No stalling. No bucking. No killing the engine. *Full power range is instantly available.*

CHRYSLER HAS PARTS AND SERVICE AVAILABILITY

Chrysler will keep you operating with a minimum of downtime. *Chrysler Parts and Service are always available!* Again quantity production and standardization keeps strategically located depots and Chrysler Industrial Engine Dealers supplied with complete stocks of parts for immediate delivery.

See your local Chrysler Industrial Engine Dealer, or write:
Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.

CHRYSLER
Industrial Engines and Power Units

HORSEPOWER WITH A PEDIGREE

BUSINESS has been our BUSINESS longer than any other BUSINESS in our BUSINESS! . . . (AN AD ABOUT BUSINESS)

BUSINESS men, I'm sure will agree that
BUSINESS insurance is a complex
BUSINESS that calls for plenty of
BUSINESS experience. And because we've specialized in
BUSINESS problems longer than any liability insurance
BUSINESS in America, we feel we're better equipped
to help your
BUSINESS prosper!
BUSINESS know-how has helped us to reduce
BUSINESS losses through accidents, and increase
BUSINESS profits and production in actually hundreds of
BUSINESSES!

BUSINESS know-how enables us to plan for your
BUSINESS special tailor-made programs designed
to fit specific
BUSINESS needs. And
BUSINESS executives will certainly welcome the important
BUSINESS savings, through dividends that we offer to all
BUSINESS policyholders! The point is . . . isn't it good
BUSINESS to do
BUSINESS with the first
BUSINESS in the
BUSINESS!

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MAIL THIS COUPON NOW – WITHOUT DELAY!

Dept. O-109, American Mutual Liability Insurance Company
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Without obligation, please *rush* to me information on *The All-American Plan* so that I may be richer and happier!

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New stress analysis method developed at Illinois Institute of Technology

A new method of three-dimensional, photoelastic stress analysis has been developed by Max M. Frocht, research professor and director of experimental stress analysis at Illinois Institute of Technology, and Roscoe Guernsey, associate professor at the University of Texas, formerly a research fellow at Illinois Tech.

With the new method it is now possible to determine the actual principal stresses at any interior point of a body. Prior to this development, only principal shears could be found.

In making such a study, Dr. Frocht first machines a plastic model of the part to be analyzed. This is then placed in a special furnace designed for this purpose.

The loads are applied while the plastic model is heated to a suitable high temperature and are not removed until after the model cools to room temperature. The stresses developed by the loads are in this way "fixed" or "frozen" into the model.

The model can then be sliced or sectioned without disturbing the frozen stresses. These sections, when placed in a photoelastic polariscope, reveal a stress pattern which can be observed and photographed.

The stresses present at any point in a section can be studied in detail and the complete stress system, consisting of maximum, minimum, and intermediate stresses, can be found.

Methods previously proposed required special materials not available in this country. The present method is effective with available materials such as Fosterite.

Previous methods were limited to the elastic state. The new method applies to both plastic and elastic stresses in the model.

The method has been applied to a specific problem with a great deal of accuracy.

The method makes it possible to study three-dimensional stresses in complicated machine parts and structural elements which had hitherto defied both theoretical and experimental analysis.

Dr. Frocht and Prof. Guernsey were assisted in the development of this method by David Landsberg, assistant research engineer in the photoelasticity laboratory at Illinois Tech.

Metal column design is subject of research

Some valuable design information on metal columns should be forthcoming in the relatively near future as a result of research now under way.

This conclusion appears inescapable after a study of a detailed report on the research projects given by Bruce G. Johnston, professor of structural engineering, University of Michigan, Ann Arbor, Mich., at the 1951 Annual Convention of the Structural Engineers Association of California.

Much of this research is being sponsored by the Column Research Council. Here is what may be looked for soon:

1. More logical standard design formulas for concentrically loaded columns, based on the tangent-modulus theory. These will incorporate an evaluation of the effect of yield-stress variation, shape of stress-strain curve and residual stresses. They will also be adaptable to various conditions of end restraint.

2. Better specifications for end-milling tolerances and other column imperfections.

3. Better understanding of the problems of local buckling of rolled sections and built-up members.

4. More rational design methods for compression components of trusses and continuous frames, taking into consideration continuity and the over-all factor of safety with respect to buckling.

5. Improved specifications for members subjected to both axial forces and bending moments.

6. Clearer ideas of the behavior of columns under dynamic loading, indicating the extent to which procedures for static-load design may be applicable.

7. Simple design methods for top chords of bridges that have no top lateral bracing.

The Column Research Council was organized in 1944. Initially supported by the Engineering Foundation, it is now being aided, in addition, by major contributions from the Association of American Railroads, American Institute of Steel Construction, Aluminum Company of America, Office of Naval Research, Research Corporation and various highway departments. Shortridge Hardesty, consulting engineer, of New York City, is chairman and acting director. Lynn Beedle, of Lehigh University, is secretary.

Rapid testing of metals by new method at R.P.I.

Joseph L. Rosenholtz and Dudley T. Smith, scientists at Rensselaer Polytechnic Institute, Troy, N. Y., have found a rapid and accurate way for testing steel alloys, other metals and plastics to find out how long they will stand up under normal loads when they are used for making moving parts of machines. The apparatus which they have assembled in their laboratory makes possible the completion in 10 hours or less of a testing job which has been requiring three months or longer on costly machines under expert supervision.

The importance of the Rensselaer discovery to industry of almost every kind, but especially to defense production, rests in the fact that government and industrial laboratories, the world over, are searching constantly for materials and alloys to meet new and demanding standards.

Thousands of tests are run annually to determine if a new material will permit faster and cheaper production, prevent breakdowns and save lives in both industry and the armed forces. The Rosenholtz-Smith apparatus permits the rapid and inexpensive testing of materials for tank engines and jet motors, as well as for propellers, turbine blades, revolving shafts and many other dynamic parts.

The inventors call their discovery the Dilastrain Method. It is based on precise measurements of the extent to which specimens of a given material will expand under controlled temperatures. The patent rights will be held by Rensselaer Polytechnic Institute which will make the Dilastrain Method available under a licensing plan.

Develop cheaper method of titanium extraction

Arthur J. Kerbecek, Jr., a graduate student at Columbia University, has developed what is said may prove to be the answer to the problem of extracting titanium economically in large quantities. This metal is useful because of its light weight, high melting point, and extreme resistance to corrosion.

Herbert H. Kellogg, associate professor of metallurgy at Columbia's engineering school, a member of the government's subcommittee on basic research in extractive metallurgy of titanium, plans to bring Kerbecek's process to the attention of that group.

Although details of the process have not been revealed, Mr. Kerbecek says that an electrolytic method is used to reduce the chloride which is prepared from the original oxide.

BETTER ROADS the YEAR 'ROUND

Blending with every landscape and free from glare, roads built with Tarvia* road tar take the strain out of driving. They are self-healing under impacting traffic.

The heat-absorbing qualities of black roads built with Tarvia* road tar make them easier to keep open in winter, as snow and ice melt more quickly. And they are not affected by chemicals used to remove snow and ice.

because

1. Roads built with Tarvia* road tar improve with age. Occasional applications will renew the life of the surface, and replace worn-away material.

2. TARVIA road tar penetrates surfaces and binds together the underlying material. It thus makes possible the inexpensive use of local aggregates.

3. Less TARVIA road tar is required because there are less solvents to be evaporated before the binder becomes effective.

4. TARVIA road tar is unaffected by gasoline, kerosene, or moisture. It retains its original properties.

5. TARVIA road tar holds the aggregate tightly in the surface, and produces a gritty surface which is lastingly skid-resistant.

6. TARVIA road tar may be applied at moderate temperatures, and with ordinary equipment.

The Barrett field man is always at your call for expert practical advice.

Barrett Tarvia* ROAD TAR

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

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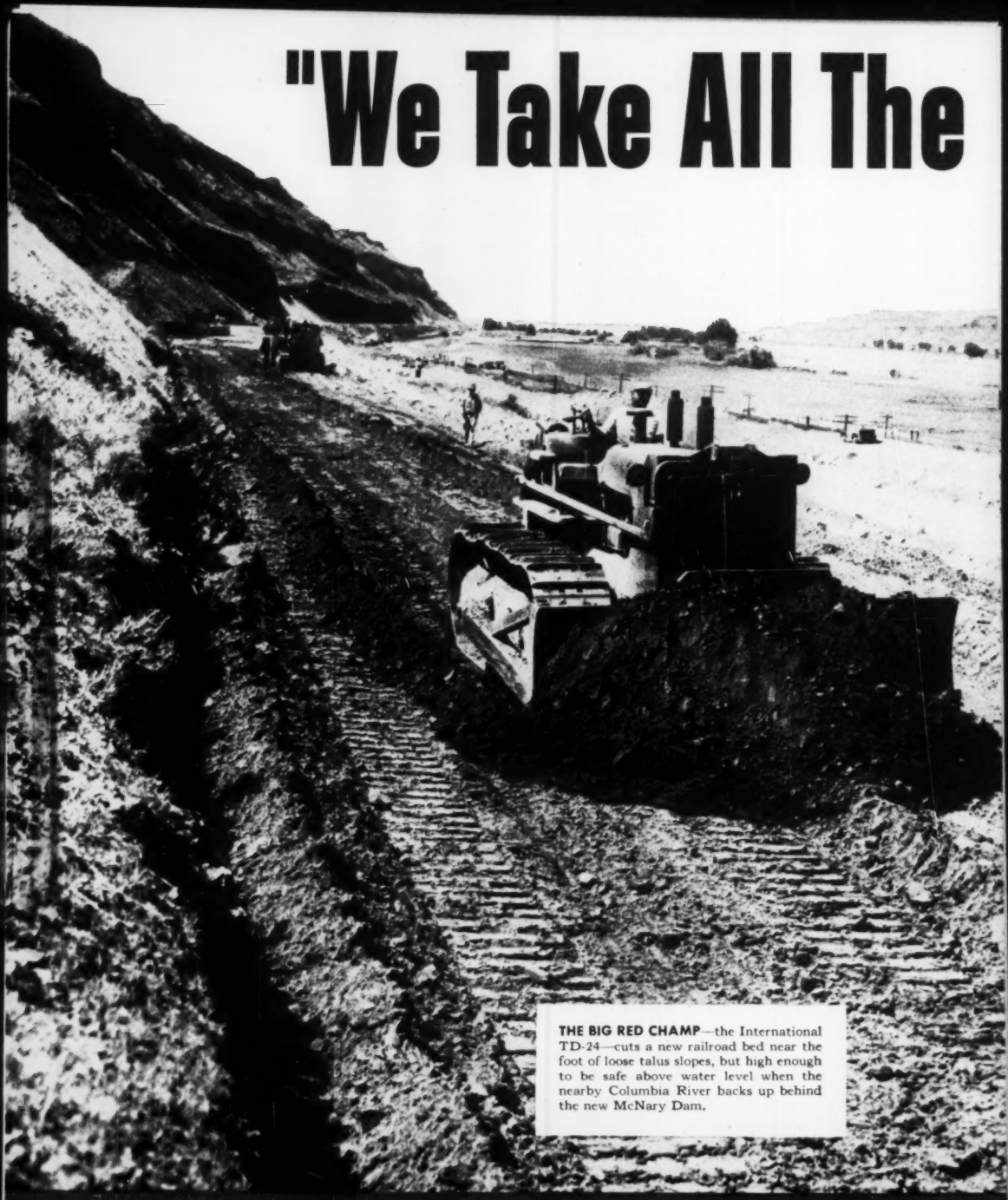
New York • Chicago • Birmingham • Detroit • Philadelphia • Boston • Rochester • Youngstown • Ironton, O. • Syracuse • Buffalo • Bethlehem, Pa. • Portland, Me. Norwood, N. Y. • Oneonta, N.Y. • Elmira, N. Y. • Cromwell, Conn. • Norwich, Conn. In Canada: THE BARRETT CO., LTD., Montreal • Toronto • Winnipeg • Vancouver

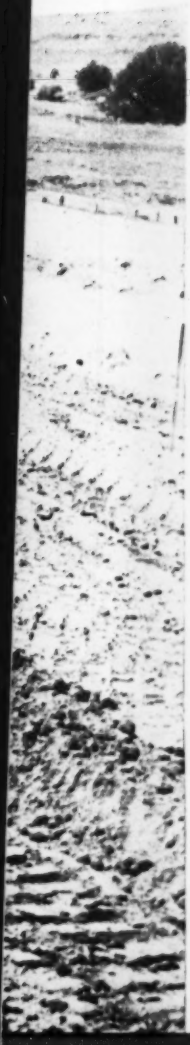
"We Take All The



THE BIG RED CHAMP—the International TD-24—cuts a new railroad bed near the foot of loose talus slopes, but high enough to be safe above water level when the nearby Columbia River backs up behind the new McNary Dam.

TOUGH JOBS"

One man and his Big Red TD-24 handle hardest assignments for western contractor



Out on the big Union Pacific relocation job north of the McNary Dam site, Cardon & Cox—subcontracting for Utah Construction Co.—have an International TD-24 shuttling back and forth from one end of their section of the project to the other, doing the hardest jobs wherever they may be.

TD-24 operator Wilbur Strootman says, "We take all the tough assignments, and do them faster and better than any other tractor on the job. This TD-24 is the best tractor I've ever been on. I really go for it."

Here are five big reasons why—five advantages that make the Big Red TD-24 the work champ of the world:

TD-24 Power—148 maximum drawbar horsepower, more than any other crawler on the market.

TD-24 Speed—8 forward speeds, 8 reverse. Moves loads faster, gets back faster for a faster work cycle.

TD-24 Operation—Synchromesh transmission, you shift "on-the-go." And you go up or down one speed without declutching.

TD-24 Steering—Fingertip steering for pivot turns, feathered turns, turns with power on both tracks.

TD-24 Starting—Quick push-button starting in any weather.

Want to know more? Ask a friend who owns a TD-24. And ask your International Industrial Distributor both about the TD-24 and about his fast field service and complete shop facilities. You'll be a TD-24 man from then on in!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

INTERNATIONAL POWER PAYS OFF ON THIS BIG RAILROAD RELOCATION PROJECT

MEN AND JOBS

NEW TYPE OF REINFORCED CONCRETE—Officials of the American Concrete Institute in St. Louis for a fall meeting took time out to see the first application on a large concrete frame building of the latest in reinforced concrete construction in which the reinforcement and the form for the concrete are combined in one permanent steel product called Cofar. It is made by the Granco Steel Products Co. of Granite City, Ill. It replaces the usual reinforcing bars and wood forms in concrete floors and roofs. The building is the new warehouse of Associated Grocers in St. Louis, covering 130,000 sq ft. Left to right, are: Harry F. Thomson, Chicago ACI president; Frank H. Jackson, Washington, D. C., ACI past president; H. J. Gilkey, Ames, Iowa, ACI past president and Albert H. Baum, building commissioner of St. Louis, and past president of the Building Officials Conference of America. MacDonald Construction Co. is the contractor and Sverdrup & Parcel, the engineers.

New Appointments

Highway departments

Chief Engineer E. L. Schmidt of the Pennsylvania State Highways Department has been designated as deputy secretary of highways to serve until a successor is named to the late secretary Ray F. Smock.

John N. Ash is division engineer of survey and plans in the Hartford district, Connecticut highways.

C. F. Grigg, consulting engineer of Spokane, Wash., has opened a branch office at Pasco, Wash., with **Myron Radelmiller** as manager. Radelmiller resigned Nov. 1 as water manager at Pasco.

Consulting engineers

Gannett Fleming Corddry & Carpenter, Inc., Harrisburg, Pa., have bought the engineering business and equipment from the estate of the late Charles Haydock of Philadelphia. They have also taken over the Haydock staff. Mr. Haydock worked on water supply design and construction, public utility rates studies, appraisals and management. He also made financial studies for bankers. He practiced in Philadelphia for 24 years. Prior to that he had been chief engineer of the firm that has now taken over his business.

COMMISSIONER—Edgar F. Copell, since 1935 highway traffic engineer of the Massachusetts Department of Public Works, has been appointed commissioner of the Metropolitan District Commission. Water supply and sewerage come under his authority. He studied engineering at Northeastern University, Lowell Institute and M.I.T.—all in night courses. In 1917 he joined Fay, Spofford & Thorndike, Boston. He held important positions with the state public works department. He inaugurated the number route system of the Bay State, its traffic control signals, maintenance facilities for signals, snow removal equipment, traffic survey activities, reports on developments, and safety engineering for highways. He has been traffic consultant to many municipalities.

Government agencies

Henry C. Boles of Boston will go to Liberia as chief architect of a public housing and building assignment of the United States Housing and Home Finance Agency. He has had charge of the public housing program in Connecticut and also has served in the Corps of Engineers, United States Army.

The Department of Labor of Quebec has loaned one of its key engineers, **Gabriel Rousseau**, to assist in Greece's vocational training plans now being re-organized. He is a graduate of Montreal's "Ecole Polytechnique" and also of the Massachusetts Institute of Technology.

Marion F. Hetherington is now assistant chief of the Federal Power Commission's Bureau of Power, moving up from his position as FPC's Atlanta regional engineer. He succeeds Francis L. Adams, recently appointed chief of the Bureau of Power.

State, city and county

John E. Gragg is now engineer of Dallas County, Tex.

J. Anthony Carrothers has been named traffic engineer for Dayton, Ohio. He had a similar post in Schenectady, N. Y.

S. K. Wilson, of Camp Hill, Pa., has been appointed senior water works engineer for the Pennsylvania Public Utility Commission.

Ralph Speer, formerly city engineer of Iron Mountain, Mich., has become city manager of Sault Ste Marie.

Henry Ten Hagen, of the New York State Public Works Department, has been named deputy chief engineer. A graduate of Cornell University, he has been with the department since 1913.

G. H. Jones, T. B. Waddell and A. Gordon, California State hydraulic engineers have been made assistant state engineers.

Milton H. Bidwell has been appointed director of the environmental sanitation division of the Rochester, N. Y. health bureau, succeeding George A. West, resigned. He will direct four supervisors and 30 inspectors.

Corps of Engineers

Hubert B. Elder has been appointed resident engineer for The Dalles Dam, Ore., transferring from Nashville, Tenn., Corps of Engineers district where he was resident engineer of the Holston Ordnance Works.

Col. C. H. Whitesell, Jr. assistant Washington, D. C., engineer commissioner since July, 1948, has been transferred to Richmond, Va., to serve with the Eastern Ocean Division of the Corps of Engineers.

Lt. Col. C. A. Rust, formerly project

(*Continued on page 74*)

MAKING TIME or MARKING TIME-
The Difference is YOUR PROFIT

Firestone
OFF-THE-HIGHWAY TIRES
MAKE THE DIFFERENCE

YOUR profit on the job is the difference between going through and going down. And the tires that make those profits possible are the tires that develop the greatest traction and have the strength to take it.

Firestone Tires give you extra service at no extra cost because they are built with extra strong Gum-Dipped rayon cord bodies . . . built with four extra impact plies to protect the bodies . . . built with double-thick, snag-resistant sidewalls . . . built with extra heavy treads engineered to fit the job. Firestone Tires not only run longer, but they always give maximum traction to cut your loading time and increase the operating efficiency of your equipment.

See your nearby Firestone Dealer or Store. Let them show you how Firestone Off-The-Highway Tires will cut your downtime and increase your profits.

WHEN YOU BUY NEW EQUIPMENT OR REPLACEMENT TIRES, SPECIFY FIRESTONE

Enjoy the Voice of Firestone on radio or television every Monday evening over NBC

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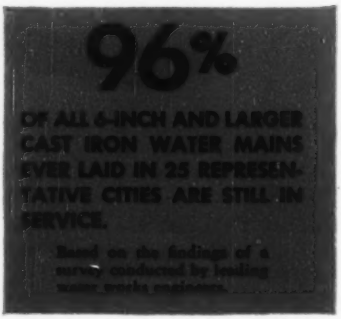
A "Grand National" Winner... like Cast Iron Pipe...has

The Grand National Steeplechase, over a course of about 4½ miles with 30 jumps, is a rugged test of the *stamina* of a horse. Likewise, the test of time proves the *stamina* of cast iron pipe. For example, in more than 30 of the older American cities, cast iron water and gas mains are now in their second century of service. These sturdy mains are meeting changed conditions undreamed-of 100 years ago—in street traffic and in construction aboveground and underground. The resultant traffic shock and beam-stresses, cast iron pipe has taken in its stride, because of its shock-strength, beam-strength and crushing-strength.

No pipe, deficient in any of these strength-factors of long life, should ever be laid in paved streets of cities, towns and villages.



CAST IRON PIPE

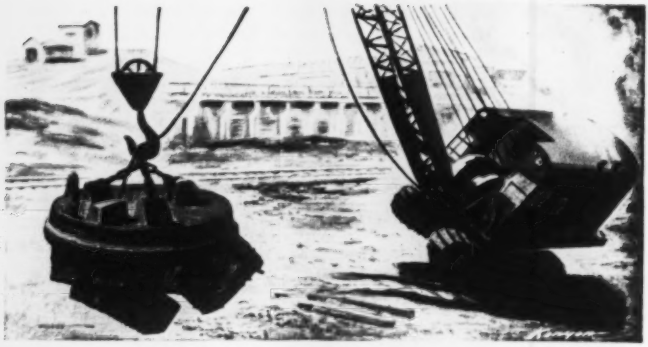
STAMINA!*

* First run in England 112 years ago, the Grand National Steeplechase, over the famous Aintree course of 4 miles, 856 yards, was won in the record time of 9.20-2/5 by Golden Miller in 1934.

CAST IRON

CAST IRON PIPE RESEARCH ASSOCIATION; THOS. F. WOLFE, MANAGING DIRECTOR. 122 SO. MICHIGAN AVE., CHICAGO 3.

SERVES FOR CENTURIES



How NOT to lose $4,099.85!

(Based on Hartford Claim #20216)

This crane operator was moving 800-pound bales of steel scrap when, unknown to him, the magnet picked up three bales instead of one!

Suddenly, the overloaded crane crashed on its side, bursting into flames from spilled gasoline!

The operator escaped serious injury, but the crane suffered a $4,099.85 damage before the fire was finally brought under control.

Fortunately, the owner was protected by a *Hartford Contractors' Equipment Policy*. Hartford paid his loss . . . permitting him to repair the crane and continue operations.

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Men and Jobs . . .

engineer at the North Richland, Wash., project of the Corps of Engineers, has been assigned as special assistant to Col. W. H. Mills, district engineer of the Walla Walla, Wash., district. He is a 1940 engineering graduate of the University of Washington.

Brig. Gen. Robert G. Lovett heads the new East Ocean Division office in Richmond, Va., which supervises practically all overseas military construction from Greenland to North Africa.

Lieut. Col. Leslie M. Gross recently returned from Korea, is officer-in-charge of the San Antonio sub-office of the Galveston, Tex., district.

Resignations

Roy L. Greene has resigned as planning engineer with the Tacoma, Wash., city planning commission. He is returning to the state highway department.

A. E. Suro, Mahoning County (Youngstown, Ohio) planning director, has resigned to take a similar post in Montgomery County, at Dayton.

Jack Davis has resigned as engineer of Dallas County, Tex.

M. A. Newlin, office engineer and with the Indiana Highway Department for 25 years, has resigned, with **Martin L. Hayes,** former district office engineer, named to succeed him. Newlin is moving to Los Angeles.

Myron D. Downs, city planner of Cincinnati, Ohio, since 1928, plans to resign Dec. 31.

A BRIEFING—on the Corps of Engineers' program in the Omaha District is given to Lieut. Col. Christian Hanburger, left, new area engineer for the Rapid City Air Force Base, by Col. Henry J. Hoeffer, district engineer. Lieut. Col. Hanburger was transferred from Washington, D. C., where he was attached to Air Force Headquarters. He will head the huge military construction program at the South Dakota installation. Lieut. Col. William E. Leckie, former area engineer, has been transferred to the General Staff College at Fort Leavenworth, Kan.

Men and jobs . . .

Charles M. Chuckrow has resigned as president of Fred T. Ley & Co., Inc., and has organized Charles M. Chuckrow, Inc., at 101 Park Ave., New York.

Warren E. Van Arsdalen, superintendent of the New Delaware Memorial Bridge near Wilmington, Del., since its opening in August, has resigned. **G. Lester Daniels** is now general manager of the bridge.

Ed Dunn, water and sewage inspector with the Division of Public Health Engineering of the Winston-Salem, N. C., health department, has resigned to become field inspector and director of quality control of the Yadkin Valley Co-operative at Wilkesboro, N. C.

Walter Mischley, Manistee, Mich., city manager, has resigned to become chief of the municipal and commercial facility branch for the Atomic Energy Commission at Richland, Wash.

Honors

The emblem for meritorious civilian service has been awarded to **Lawrence B. Feagin,** chief technical assistant to the St. Louis Dist. Corps of Engineers.

Feagin received a citation from Lt. Gen. Lewis A. Pick, chief of Army Engineers, which said that he showed "unusual initiative and competence" in finding a cheap, suitable material to build revetments for the eight-mile channel of the Chain of Rocks Improvement project.

Wendell H. Davis, a civilian employee of the Corps of Engineers, in the Military Construction Division, Office Chief of Engineers, has been awarded $1,606.65 for a suggestion that resulted in changing the method of duplicating architectural and structural drawings and designs from conventional methods to a single positive-to-positive technique through the use of autopositive film and paper prints. The Corps of Engineers reports that it has saved about $982,000 in the first year since adopting the suggestion.

Among the alumni at Drexel Institute who were awarded citations at the recent 60th anniversary of the institute were: **John B. Letherbury,** 1930, for technical leadership in the field of ship design; **Matthew H. McCloskey, Sr.,** 1916, for leadership in major construction projects, in the eastern seaboard area; Samuel Allan Wilson, Sr., 1928, for industrial and engineering leadership; **Alfred Thomas Naidelich,** 1938, for leadership in civil engineering; **Miles N. Clair,** 1921, for civic leadership, for studies at the Logan International Airport, Boston, and for advancing the technology of concrete construction; and **Aaron Harry Wagner** for professional leadership in civil engineering.

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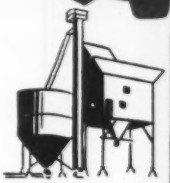
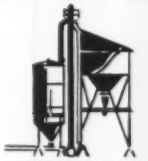
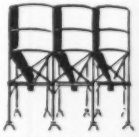


STATIONARY BATCHING PLANTS

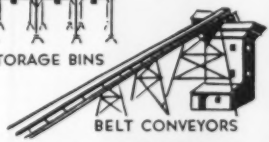


PORTABLE BULK CEMENT PLANTS

PORTABLE AGGREGATE PLANTS



STORAGE BINS



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WARREN, OHIO

MEETINGS

All-Canadian seaway suggested by C. D. Howe

Canada will push for legislation in the present parliament to authorize construction of an all-Canadian St. Lawrence seaway. She still hopes for U. S. Senate ratification of the 1941 international agreement to build the joint project for power and navigation, but Canada cannot afford to wait longer for U. S. action.

That was the gist of a speech in Washington, D. C., by Canada's Minister of Trade and Commerce, C. D. Howe. Speaking at the annual dinner of the Washington Society of Engineers, he admitted the difficulties that face a Canadian Seaway. It will take at least a year or two to make necessary legal and engineering preparations.

Howe conceded also that Canada would not start the seaway until New York state or some other agency on the U. S. side can enter into joint agreement to build the planned power development at the same time. Without the power works, the all-Canadian seaway would be impractical.

By undertaking to build and finance the seaway entirely on her own, Canada would add a string to her bow, Howe said. As a visitor, he refrained from discussing the effect on the St. Lawrence controversy in the U. S. But, if the seaway no longer required action by Congress, it would theoretically be possible to gain approval of the power project by other means. First, the Federal Power Commission would have to reverse its previous stand and issue a license to New York State or some other agency. Then the International Joint Commission, made up of equal numbers of Canadian and U. S. representatives, would have to approve the project.

This possibility is expected to exert some influence in congressional debate on the St. Lawrence issue in the session that starts Jan. 8.

N. Y. group hears extent of industrial pollution

The Interstate Sanitation Commission, completing the first phase of an industrial wastes inventory of its 1,500-mi Conn.-N. Y.-N. J. coastline, reports 306 industries are dumping 515 mgd of liquid wastes—nearly all untreated.

Inventory details won't be published until some time next year, but this much was revealed at a recent meeting in New York City by Seth G. Hess, director and chief engineer of ISC, and M. B. Smith, sanitary chemist. It was a meeting of the metropolitan section of the New York Sewage and Industrial Wastes Association.

About one-fifth of the contaminated wastes discharging directly through industry-owned outfalls are going into Class A (recreational) waters. In all, 2,100,000 population equivalents of pollution are discharged daily. The 306 waste producing industries are but a small part of 1,500 industries on the coastline; but these 1,500, in turn a small fraction of 30,000 industries within the whole area, account for 95% of its industrial waste volume.

Biggest dose of BOD of the area comes out of Union County, N. J., into Arthur Kill and Newark Bay. Most of the toxic wastes come out of the metal-working industry centered about Bridgeport, Conn.

Further steps in the survey, started late in 1949 with federal funds granted under P.L. 845, will: inventory industries that discharge wastes into public sewers; estimate pollution entering the area through tributaries; study dilution and circulation patterns in bays, canals, etc.

It is noteworthy that most of the offending industries use and discharge the area's salt water which could not be conveniently handled in domestic sewage treatment works.

Laboratory design, radioactive materials

The Atomic Energy Commission is letting a few tricks out of its bag, to promote industrial, agricultural and medical research with radioisotopes. Some of these were displayed for the first time, and other data that had been declassified previously were summarized, at a two-day conference on laboratory design for handling radioactive materials conducted by the Building Research Advisory Board in Washington, D. C., Nov. 27 and 28.

Papers presented covered laboratory layout, air supply and exhaust, shielding of radioisotopes, surfaces and finishes, and waste disposal.

Design and construction of such laboratories, said A. D. Mackintosh, architect, Oak Ridge National Laboratory, are not vastly different, nor more costly, than for a standard conventional laboratory. Precise handling of a few new factors and greater attention to detail are major requirements.

The conference was sponsored by both the AEC and the American Institute of Architects. BRAB, a component of the National Academy of Sciences, 2101 Constitution Ave., N.W., Washington, D. C., is publishing the proceedings.

Key resolutions adopted at P.A. Highway Congress

The recent Fifth Pan American Highway Congress at Lima adopted several key resolutions to stimulate road development in the Americas and especially the completion of the Pan American Highway System.

(1) That the Organization of American States create a special committee with headquarters in Washington to expedite construction, improvement and completion of the Pan American Highway. The committee would determine priority of projects and coordinate government and private interests.

(2) Ratification of the 1949 Geneva convention regulating international highway traffic.

(3) Adoption of uniform traffic laws or laws as nearly uniform as possible.

(4) That the Pan American Union invite directors of traffic in member Organization of American states to prepare the basis of an agreement on size and weight limitations of vehicles, bearing in mind existing agreements.

(5) That an extraordinary Pan American Highway Congress be held in October, 1952, at Mexico City.

(6) That the Sixth Pan American Highway Congress be held in 1954 at Caracas.

(7) That the central committee of the Permanent Institution of Pan American Highway Congresses widen its membership to include representation from the governments of Brazil, Chile and the United States, and that the Central Committee (a) prepare the groundwork for the creation of a definite organization to administer continental highway affairs; (b) request the governments of the American republics to give as soon as possible their views and suggestions on the formation of such an organization; (c) that the central committee send to the governments of the American republics, within 90 days of the extraordinary Pan American Highway Congress in Mexico City, proposed statutes for establishing the organization, and (d) that the central committee study the possibility of rotating the headquarters of the proposed organization among the various American republics.

N.E.S.W. Assn. meets

Public opinion backed by the threat of formal legal action is more effective than legal action alone in curbing water pollution, Walter J. Shea, Rhode Island's chief sanitary engineer told 250 delegates at the annual meeting of the New England Sewage Works Association. He said that since Rhode Island started its intensive pol-

(Continued on page 80)

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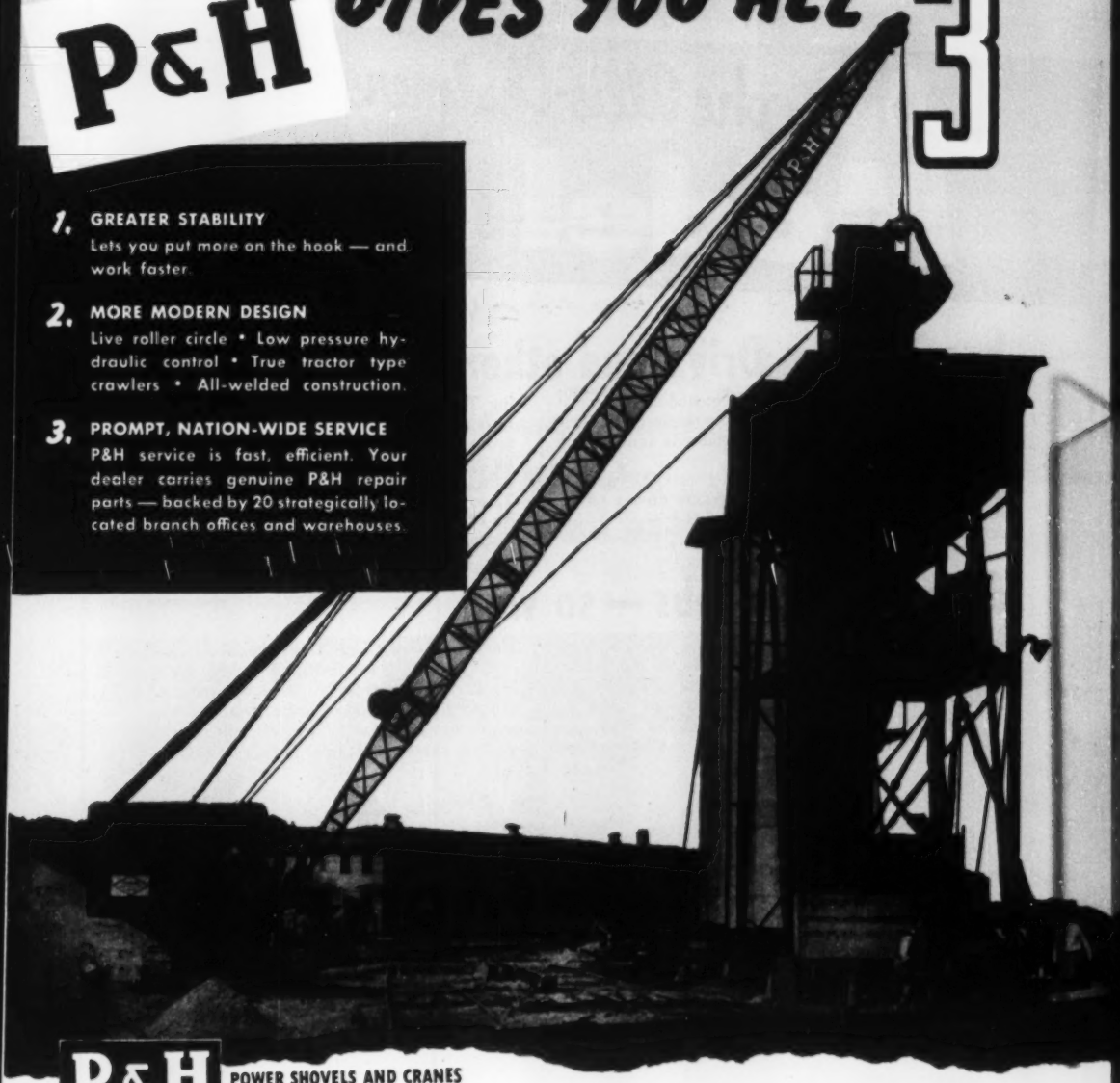

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The Model D is engineered from the ground up *as a motor grader* — with no compromises. It is streamlined and completely functional, without the objectionable features and handicaps of a converted machine.

Tandem drive — with four ground-gripping contacts instead of two — gives the Model D greater driving power and stability, smoother blading. Its other BIG GRADER design and performance advantages include: shock-absorbing **Tubular Frame** — **ROLL-AWAY Moldboard** that *rolls* more material, faster and with less power — effort-saving **Hydraulic Controls** — **Engine Over Drive Wheels** for best traction — **More clearance** all the way — **Long Wheel Base** to give a smoother grade — **Simple Power Train** for best performance, easiest servicing — **Fully Visible Blade** for greater efficiency — Comfortable seat, "clean" platform, convenient controls.

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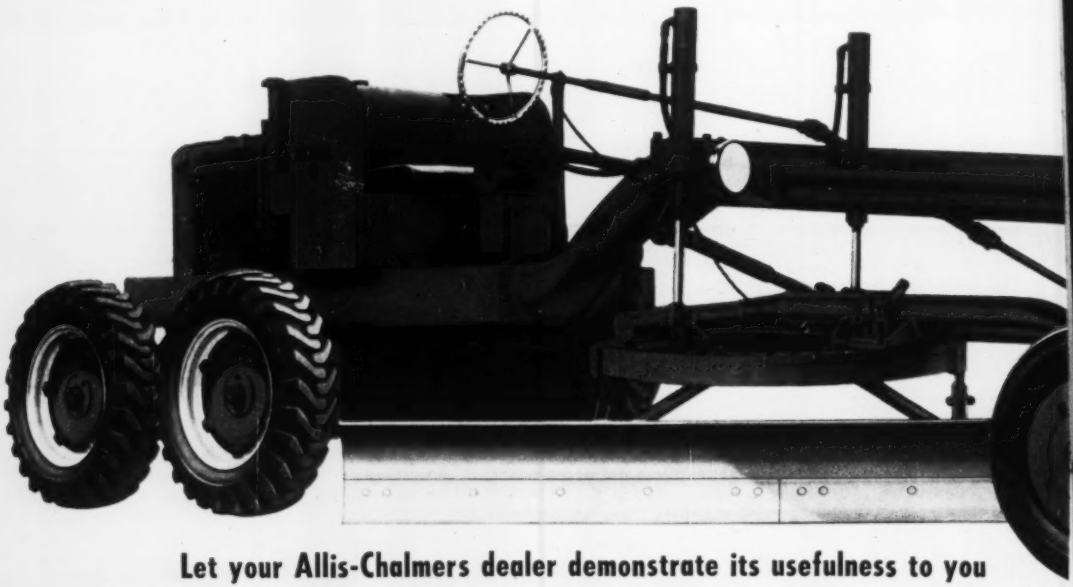

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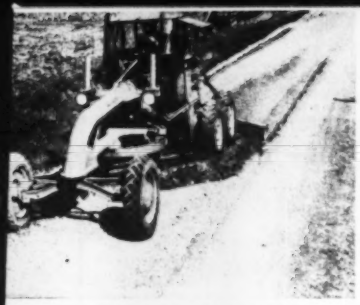

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... SOME jobs for all users

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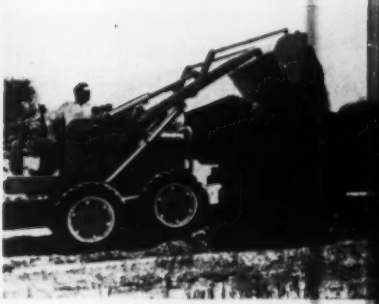
Maintains access roads, park drives,
parking lots, playground areas.



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SPEEDS — four forward, 2.40 to 18.61 mph.; reverse to 2.9.

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Meetings . . .

lution abatement campaign in 1947, $11,150,000 has been spent for facilities completed or under construction. Other projects in various stages of development call for the expenditure of $5,000,000 more.

Dr. Leo Blumberg was renamed chairman of the Delaware State Board of Registration for Professional Engineers and Land Surveyors. Also named were Martin J. Bergen, vice-chairman, and Carmen J. Facciolo, secretary.

The American Concrete Pipe Association conducted a short course school in Chicago Nov. 26-28 for representatives of its member companies. The association's research engineer, John G. Hendrickson, was in charge. The objective was better concrete pipe manufacture and service, and speakers covered such subjects as jacking concrete pipe, hydraulics of sewers and culverts, loads on pipe conduits, backfilling and the hydrogen sulphide problem in sewer construction.

CALENDAR

Kansas Contractors Association, annual meeting, Hotel President, Kansas City, Mo., Jan. 10-11.

N. Y. Section, American Water Works Assn., winter luncheon meeting, Hotel Park Sheraton, N. Y., Jan. 15.

Highway Research Board, annual meeting, National Academy of Science Bldg., Washington, D. C., Jan. 15-18.

N. Y. Sewage and Industrial Wastes Association, annual meeting, Hotel Statler, N. Y. City, Jan. 17-18.

Canadian Construction Association, annual meeting, Royal York Hotel, Toronto, Ont., Jan. 20-23.

National Association of Home Builders, annual convention and exposition, Conrad Hilton and Congress Hotel, Chicago, Jan. 20-24.

American Road Builders Association, Golden Anniversary, Rice Hotel, Houston, Tex., Jan. 21-24.

Wisconsin Highway Commissioners and Highway Committee Members Association, winter conference, Schroeder Hotel, Milwaukee, Jan. 22-24.

Associated Equipment Distributors, Conrad Hilton, Hotel, Chicago, Jan. 27-31.

American Society for Metals, William Penn Hotel, Pittsburgh, Pa. Jan. 31-Feb. 1.

California Conference on Street and Highway Problems, University of California, Los Angeles, Feb. 6-9.

National Council of Private Motor Truck Owners, convention, Hotel Statler, Washington, D. C., Feb. 7-8.

National Sand and Gravel Association, convention and exposition, Conrad Hilton Hotel, Chicago, Ill., week of Feb. 11.

Illinois annual Conference on Highway Engineering, Urbana, Feb. 19-21.

N. Y. State County Highway Superintendents Association, DeWitt Clinton Hotel, Albany, Feb. 20-22.

Materials Handling Conference, Purdue University, Lafayette, Ind., Feb. 25-26.

OBITUARY

Gene W. Hall dies, supervised much building

Gene W. Hall, 53, partner of Parsons, Brinckerhoff, Hall & Macdonald, New York City, died at Oceanside, N. Y., Nov. 29. He had spent his entire business career with Parsons-Brinckerhoff and its predecessor firms, and was a partner for the last 13 years.

From 1930 to 1936 General Hall worked with surety companies and undertook field supervision and completion of defaulted contracts totaling $30,000,000. Later he acted as consultant to Gen. Brehon B. Somervell in remodeling Fort Schuyler into the N. Y. State Merchant Marine Academy.

In the second World War he was commissioned a major in the Army Engineers. Promoted to lieutenant colonel he served as executive officer to Maj. Gen. W. E. R. Covell in the construction of off-shore bases in the Caribbean. Later, he was in the China-India-Burma theater as chief of staff of Army Field Services and later deputy chief to the commanding officer. He won progressive promotion to brigadier general and received the Legion of Merit for his work.

Frank E. Firestein, 63, engineer for the Cook County, Ill., highway department for 32 years, died Nov. 23 in Chicago.

C. Wardale-King, for 15 years on the staff of P. L. Pratley, consulting engineer, Montreal, Que., died Nov. 16, at Outremont, Que. He had been directing construction of a viaduct at St. John, N. B.

Lewis H. Wheaton, 83, died at Toronto, Ont. Nov. 16. He was on the engineering staff of the highways department of Nova Scotia for many years until 1945, when he retired.

Andrew Kennedy, consulting engineer, died at his home in Old Forge, Pa. Nov. 26. He had resided for 50 years in Seattle, Wash., where he was a consulting engineer with the U. S. Government. He established residence in Old Forge about five years ago.

Howard S. Reed, 83, active in Arizona engineering projects since 1905, died at Phoenix, Nov. 11. He worked for the reclamation service. During World War I he was a captain with the Corps of Engineers. He was Arizona state director of the Public Works Administration from 1933-1937, state engineer from 1937-1939, and director of slum clearance projects until his retirement in 1945.

Edward T. Grandlienard, 72, at one time dean of the Towne Scientific School of the University of Pennsylvania, died Nov. 27, at Drexel Hill, Pa. Mr. Grandlienard headed the Towne School from 1928 to 1930. He was professor of civil engineering from March, 1924, until his retirement in June, 1944. He first became associated with the university in 1906 as an instructor in civil engineering. He was graduated from New York University in 1899 with Phi Beta Kappa honors.

Wm. S. Hewett, 85, retired contractor, of Minneapolis, Minn., and pioneer builder of prestressed concrete water tanks, died at St. Petersburg, Fla., on Nov. 21. He had been a member of ASCE since 1909.

Albert S. Leeper, 75, civil engineer of Kent, Wash., died Nov. 19. He was in charge of constructing Kent's first municipal water system about 40 years ago. He served simultaneously as city engineer for the neighboring towns of Kent, Auburn and Sumner. He was with the county engineer's office at Seattle for 12 years, head of the department from 1942 to 1944.

Charles William Dill, 81, civil engineer in Ontario and western Canada, died in Vancouver, B. C., Nov. 24. He was at one time assistant city engineer for Toronto. He was graduated from the University of Toronto in 1892 and became public works engineer at Tonawanda, N. Y., and supervised the construction of the upper steel arch bridge at Niagara Falls. He was for a time city engineer of Nelson, B. C. In 1908 he went into business for himself in Ontario and western Canada, built part of the Welland Ship Canal between Lakes Erie and Ontario, became inspector of highways for British Columbia, and during the last war supervised a section of the Alaska Highway construction through northern British Columbia.

Walter N. Hazen, 85, who retired 15 years ago from the Franklin County, Ohio, engineering department, died in Columbus, Nov. 10. As a surveyor for Columbus years ago, he assisted in the survey for Griggs Dam on the Scioto River and later supervised the drawing of a set of maps for the city.

Clay Y. Barger, 53, TVA engineer, Knoxville, Tenn., who had been associated with the construction forces at

(*Continued on page 82*)

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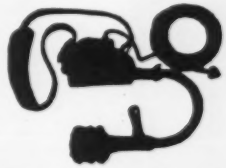
CONCRETE SURFACER
MODEL A



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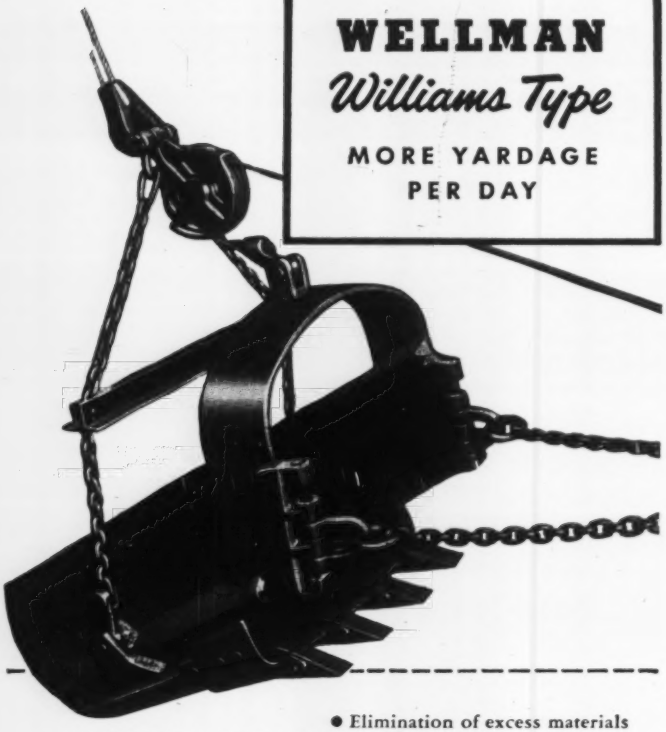

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Obituary . . .

Kingston Steam plant for 12 years, died Nov. 19.

Lyle L. Jenne, sanitary engineer of the Philadelphia Bureau of Water, died Nov. 21. He had been with the bureau for more than 35 years. He was a graduate of the University of Pennsylvania.

James F. Hennessey, 79, retired construction superintendent for the Monarch Engineering Co., Buffalo, N. Y., for 30 years, died Nov. 20. The firm built many of the large grain elevators along Buffalo's waterfront.

Forrest John Sanborn, 44, who until recently was a fire protection engineer in the Office of the Chief of Army Engineers at Gravelly Point, Va., died Nov. 18 in Washington, D. C. He was a lieutenant-colonel in the Army during World War II and was a member of one of the first inspection teams that went into the atom-bombed cities of Hiroshima and Nagasaki.

Aaron Alvis Layne, Sr., 58, civilian surveyor for the Army at the Washington Aqueduct, died Nov. 13. He attended the State Teachers College in Murfreesboro, Tenn. He had been employed at the Washington Aqueduct for nearly 30 years.

T. Roy Patterson, 59, for 32 years county engineer in Huron, Ont. died Nov. 18 in Gooderich, Ont. He did pioneer road building in Huron County.

George R. White, 56, chief structural engineer for Buffalo, N. Y., died Nov. 21. He had been with the city since 1935 and helped modernize its building code. He was graduated in engineering from the University of Illinois in 1916.

Frederick Pitzman, 62, president of Pitzman's Co. of surveyors and engineers, St. Louis, Mo., died Nov. 17. He became president of the firm in 1923 on the death of his father, Julius Pitzman, who established the business 75 years ago. A civil engineer, Mr. Pitzman was graduated from Washington University, St. Louis, and did postgraduate work at Cornell University.

Emory T. Hague, 83; former engineer for the Akron, Ohio, city waterworks, who retired in 1939 after 26 years of service, died Nov. 19 in Cuyahoga Falls, Ohio.

Charge contractors violated wage rules

With wage controls almost a year old, the government has taken its first big step toward enforcement of wage ceilings. Formal charges have been placed against two Washington, D. C., contractors for paying above-scale wages to bricklayers on a hospital construction at Ann Arbor, Mich.

Thousands of complaints of suspected violations have been investigated by inspectors of the U. S. Labor Department's Wage & Hour Division, who also look for violations when making routine payroll checks under the Federal Wage-Hour Law. Most have proved groundless. Some, of a minor nature, have been "washed out" by regional offices of the Wage Stabilization Board when the employer agreed to restore his wages to the legal, approved level.

The two contractors are the first against whom formal action has been taken with the objective of imposing a penalty: disallowance of all or part of the unapproved wage payments as expense for income tax purposes or in computing costs under the government contract. The Department of Justice may be asked to prosecute wilful violations, for which the criminal penalty is up to $10,000 fine and one year in jail. Criminal prosecution was never asked during the war for wage-control violations, and only in extreme cases of employer defiance of a rollback would it be invoked.

The regional WSB Enforcement Commission in Detroit will hear charges against the two contractors and determine the penalty. The commission is a quasi-judicial body of three "public" members before whom WSB enforcement attorneys prosecute suspected violations. Appeal may be taken to the National Enforcement Commission in Washington.

The Contractors are J. D. Hedin Construction Co. and Anchor Fireproofing Co. Hedin is accused of paying $3 an hour to bricklayers on construction of the $7 million Veterans Memorial Hospital. Anchor Fireproofing allegedly paid bricklayers $2.87½ an hour on an addition to the University of Michigan Hospital. The legal area rate for bricklayers in Ann Arbor is $2.75.

The legal rate of $3 in Detroit, only 35 miles from Ann Arbor, made it difficult, if not impossible, to get bricklayers for $2.75 an hour.

• **Sought WSB decision**—Hedin, admitting the overpayment, said he had written WSB asking if he would "be doing anything wrong" by raising the bricklayers' rate by 10 percent and received no reply.

After rolling the rate back to the legal $2.75, Hedin said he lost all but 15 of his 40 bricklayers and more threatened to quit. Moreover, he has been under union pressure to make up the wage cut in retroactive payments, he said.

Hedin said he was also under pressure from the Veterans Administration to proceed with the construction or lose the job.

Although set up last July with Miss Helen Humphrey as chairman, the membership of the National Enforcement Commission was only recently completed with the appointment of Charles O. Gregory, University of Virginia professor, and Ralph Fuchs, law professor at the University of Indiana, as members.

Regional counterparts in the 14 WSB regional offices were set up in October.

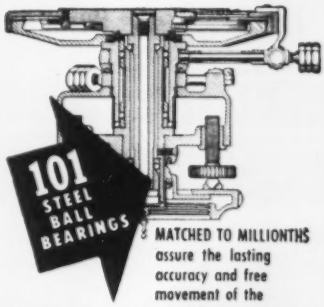
NLRB Clarifies rule on secondary boycott

In a recent unanimous decision, the National Labor Relations Board made it clear to the construction industry that a union must clearly disclose the employer with whom it has a dispute, or run the risk of being accused of conducting a secondary boycott.

Said NLRB: A union which did not clearly disclose that its dispute was with the primary employer, when it picketed at a secondary employer's premises, was actually guilty of violating secondary-boycott provisions (Section 8(b)4(A), Labor-Management Relations Act. (Boilermakers Union, Richfield Oil Corp., 95 NLRB No. 160, August 21, 1951).

Richfield Oil Corp (the secondary employer) had a contract with Superior Tank & Construction Co. to install certain vapor-recovery systems on its oil wells. Superior, the primary employer, was a non-union organization, and the Boilermakers Union had been unsuccessful for twelve years in attempts to unionize its employees. When the AFL Bakersfield Council (with which the Boilermakers Union was affiliated) failed to come to an agreement with a representative from Superior, it placed pickets at the entrance to Richfield Oil field, where Superior was working. The pickets carried signs reading "Superior Tank Co. Unfair to Building Trades Department AFL."

The trial examiner recommended dismissal of Richfield's complaint, since he found that the picketing in



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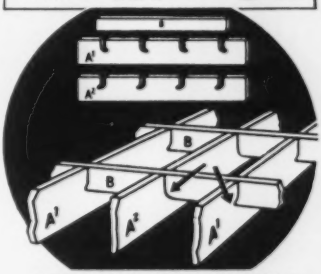

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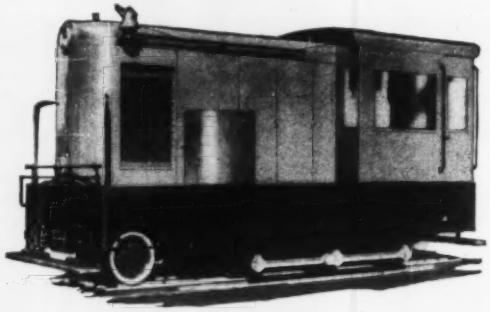

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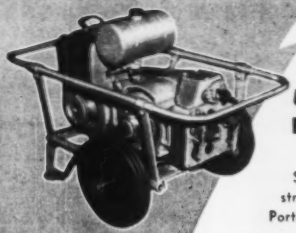
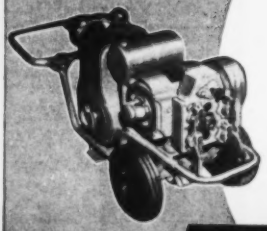


MODEL M-1. Capacity 1.25 1.5 KVA



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(Continued from page 83)

this instance measured up to the tests set out by the Board in a former case. (Moore Dry Dock Co., 92NLRB No. 93 27LRRM 1108.) The Board, however, disagreed with the trial examiner's recommendation and stated that only one of the four tests set up in the Moore Drydock Co. case need be considered:

Did the picketing at the secondary employer's premises disclose clearly that the union dispute was not with that employer, but only with another employer who was engaged in a work project there?

The Board concluded that it did not, since the strikers allowed the first truck drivers for Richfield to cross a picket line, but implied that they could not thereafter cross picket lines.

Although the pickets carried signs stating that only Superior was unfair, their actions were "designed to carry far beyond Superior alone," the Board noted. It stated that it was "convinced" that "the picketing was designed, at least in part, to force Richfield to cease doing business with Superior by inducing third parties to refuse to enter Richfield's premises. Thus, the Board continued, the picketing had a proscribed objective and was violative of Section 8(b)4(A) of the act."

Wage scales show average gain of 14 cents an hour

Union wages of construction workers rose an average of 14 cents an hour between July 1, 1950 and July 1, 1951, a survey of 77 cities by the Bureau of Labor Statistics shows. Journeymen scales increased 15 cents an hour; those for helpers and laborers, 11 cents.

Electricians led the upward movement among journeymen with an average hourly rise of 19 cents, followed by slate and tile roofers and tile layers with increases averaging 18 cents an hour for all workers in these trades. Plasterers' laborers with an average of 18 cents registered the greatest gain among the helpers and laborers classifications.

• **Range from 10-25 cents**—Upward revisions typically ranged from 10 to 25 cents an hour and affected 85 percent of the 885,000 unionized construction trades workers in the 77 cities.

Union scales are the minimum wage rates agreed upon through collective bargaining between employers and trade unions. Overtime beyond established maximum daily and weekly hours excluded.

Supplemental steel allotments help schools, hospitals and highways

Supplemental allotments of steel and other controlled materials announced last week will help several construction programs in the first quarter of 1952. Directly benefited are schools and hospitals. Allotments to these programs are not large, but they do allow construction authorizations for awarding contracts on 200 new schools and 50 new hospitals, in areas where they are most needed.

Highways gained an indirect benefit, as well as a small additional amount of steel. In studying the supplemental allotment problem, the Defense Production Administration and the Bureau of Public Roads considered raising the ceiling for self-certification of highways. As a result, a new regulation is to be issued this week.

• **Raise the ceiling**—When the amended directive comes out, highway contractors will be able to self-authorize controlled materials orders and DO orders for any job that does not require more than 25 tons of carbon steel per quarter. At present, the limit is two tons of carbon steel per quarter. Increasing the ceiling to 25 tons will take care of more than 40% of the highway construction jobs and will relieve the state highway departments and the BPR offices of handling this volume of paper work.

Administrator Manly Fleischmann, head of both DPA and NPA, announced the supplemental allotments in a letter to Sen. Burnet R. Maybank, chairman of the joint committee on defense production.

In part, the additional allotments were the result of Congressional hearings on schools, hospitals and highways. The new allotments used up most of the DPA reserve of controlled materials for the first quarter.

Supplemental steel allotments to other programs were made as follows:

Atomic Energy Commission—12,000 tons of carbon steel, including 8,500 tons of structural shapes. These represent additions to the original allotments of 141,050 tons of carbon steel, including 36,500 tons of shapes.

Defense Minerals Administration—4,600 tons of carbon steel, plus 3,500 tons of structural shapes and 1,200 tons of plate. Originally, DMA was allotted for the first quarter 36,927 tons of carbon steel, including 15,000 tons of structural.

More structural steel was granted to two programs of the Defense Solid Fuels and Transport Administrations. DSFA got 1,238 tons and DTA received 2,500. Carbon steel to the amount of 1,000 tons was allotted the Federal Civil Defense Administration to get its program started.

For construction of elementary and secondary schools, the Federal Security Agency was granted 15,000 tons of carbon steel, including 1,500 tons of structural shapes.

These quantities are in addition to the original first quarter allotment of 96,296 tons of steel, including 22,800 tons of structural steel. DPA expects that the total of 111,000 tons of steel now made available will permit continuation of about 1,400 educational projects and 200 starts of new elementary and secondary schools.

Highways got a 5% additional allotment of 10,000 tons of carbon steel, including 2,500 tons of structurals. These small quantities—supplementing the original allotment of 201,520 tons of steel, including 50,000 tons of structural shapes—won't allow any noticeable increase in highway construction volume, but they do furnish a reserve to take care of self-certified orders under a raised ceiling.

DPA considered appeals for supplemental allotments from all claimant agencies. One of the biggest requests for construction materials came from the Facilities and Construction Bureau of NPA. The bureau asked for 112,690 tons of carbon steel, more than 5 million pounds of copper brass mill products and more than 3 million of wire mill products—principally for industrial projects. This entire appeal was still under investigation last week.

Special action was taken on the appeal of the water resources division which included materials for farm irrigation wells and structural steel for essential water and sewage plants. The

(*Continued on page 86*)

Costs still climbing—but not as fast

Construction costs are still rising, but the rate of climb appears to be slowing down.

By December, 1951, ENGINEERING NEWS-RECORD'S Construction Cost Index had risen 75% above December, 1945 and the Building Cost Index had gone up 68% over the same six-year period.

Higher materials prices and labor rates were about equally responsible for these large increases.

But the rate at which construction costs were advancing was cut back sharply this year. ENR's Construction Cost and Building Cost indexes rose only 3% and 4% respectively over December, 1950.

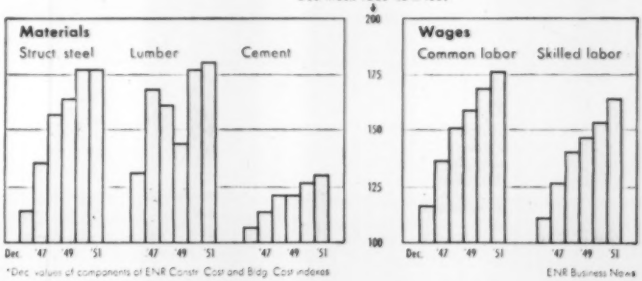
Factors included the comparatively small increase in lumber prices—2% this year compared to a 23% increase in 1950—and no price rise for structural steel. The price of cement went up 3% in 1951 compared to 4% in 1950.

• **Wages soar**—Controls didn't seem to work as well on wages. Skilled labor rates moved up 7% between December, 1950, and December, 1951. In two previous years, the comparable rise was only 5% per year.

Common labor rates didn't advance as fast as skilled labor this year, but the 5% increase since December last year equalled the 1949 advance and nearly matched the 6% rise in 1950.

How much construction costs can be held down now will depend, in a large measure, upon future wage hikes. A determining factor will be the outcome of current steel wage talks. The price of structural steel will be tied in directly, steel officials have warned. And construction trades will be watching "Big Steel" for a wage formula.

Construction costs soar after WW II, ENR December indexes* show



*Dec. values of components of ENR Constr. Cost and Bldg. Cost indexes

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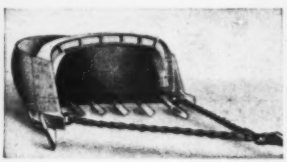

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information given Senator Maybank indicated that NPA had made a supplemental allotment of 35,500 tons of structural steel to the Water Resources Division. DPA was taking care of the divisions' remaining needs by allotting 5,500 tons of carbon steel and 4,000 tons of structurals, at the same time setting aside for irrigation wells another 12,000 tons of steel. The division's original allotment for the first quarter provided 158,152 tons of steel, including 9,000 tons of structural shapes.

HHFA speeds up defense housing

As the nation's defense industrial program gains momentum, more and more areas have been faced with the problem of housing in-migrant workers. To meet this problem, Congress passed the Defense Housing and Community Facilities and Services Act. At first, the number of "critical defense housing areas" designated was small. But now, the tempo has been speeded-up. Scarcely a day has passed in recent weeks without another area listed and more defense housing programmed by the Housing and Home Finance Agency. By the first of December, nearly 100 areas had been exempted from credit controls, and HHFA had programmed nearly 54,000 units of defense housing. Here is the breakdown:

Area	Programmed Housing Units
Alaska	
Anchorage	
Fairbanks	
Alabama	
Huntsville	600
Camp Rucker	1000
Anniston	100
Arizona	
Tucson	1000
Arkansas	
Benton	250
Camden-Shumaker	500
Pine Bluff	300
California	
San Diego	9500
Solano County	600
Camp Cooke	450
Camp Roberts	250
Barstow	200
Imperial County	100
Lancaster	200
Inyokern-Ridgecrest China Lake	350
Marysville-Yuba	250
Corona	150
Pittsburg	
Colorado	
Colorado Springs	1000
Connecticut	
Bridgeport	1000
Hartford	2000
New London	
Delaware	
Dover	200
Florida	
Cocoa-Melbourne	500
Sanford	90
Pensacola	
Key West	100
Georgia-S. Car.	
AEC, Savannah River installation	3600
Georgia	
Valdosta	300
Camp Stewart	30
Fort Benning	
Marietta	1000
Bainbridge	25
Idaho	
Arco, Blackfoot, Idaho Falls	500
Mountain Home	
Illinois	
Davenport, Iowa, & Rock Island, E. Moline, & Moline (Quad Cities)	750
Rantoul (Chanute)	500
Braidwood (Joliet)	200
Indiana	
Indianapolis	1000
Camp Atterbury (Columbus)	350
Dana	
Iowa	
(see Illinois, Quad City area)	
Kansas	
Topeka	750
Wichita	2000
Kentucky	
Paducah	1000
Camp Breckinridge	200
Fort Campbell	500
Fort Knox	500
Louisiana	
Camp Polk	250
Alexandria	100
Lake Charles	500
Maine	
Presque Isle-Limestone	175
Maryland	
Bainbridge-Elkton	
Aberdeen	
Patuxent	100
Frederick	
Ft. Meade, Laurel	400
Minnesota	
Babbitt	70
Mississippi	
Gulfport-Biloxi-Pascagoula	700
Missouri	
Ft. Leonard Wood, Rolla	
Nebraska	
Sidney	200
New Jersey	
Fort Dix	800
New Mexico	
Alamogorda	135
Las Cruces	200
New York	
Star Lake	75
Sampson Air Force Base	450
North Carolina	
Camp Lejune	300
Fort Bragg	

(Continued on page 88)

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Take the advantages of asphalt road construction or resurfacing . . . quick laying, easy upkeep, low cost, long service, use of local aggregate . . . and add the availability of Standard Oil asphalt. That's the answer to road building problems for highways and municipal streets alike.

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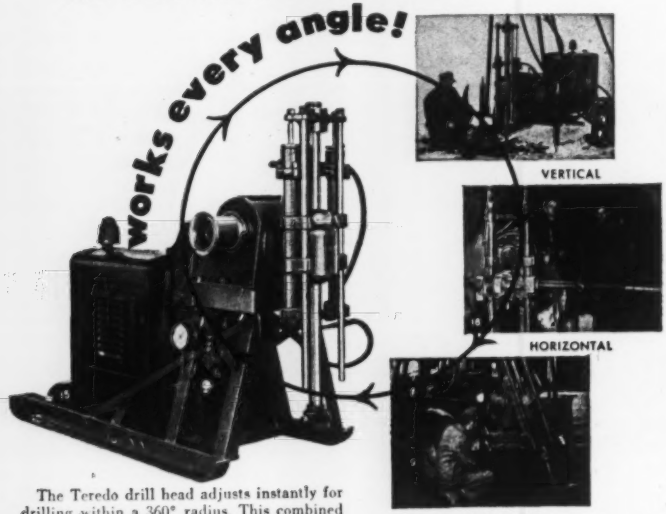

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Lorain	500
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Oklahoma	
Ft. Sill, Lawton	1000
Oregon	
Astoria	60
Pennsylvania	
Bristol-Morrisville (Bucks County)	2500
Indiantown Gap	100
Allentown-Bethlehem	1000
South Carolina	
See Ga.-S. Car. area	
South Dakota	
Rapid City-Sturgis	
Tennessee	
Tullahoma	220
Texas	
Brazoria County	600
Borger	200
Florence-Killeen	1000
Mineral Wells-Weatherford	100
Lone Star	100
Kingsville	70
Wichita Falls	200
Bryan	
San Marcos	50
Utah	
Tooele	250
Virginia	
Norfolk-Portsmouth	3000
Newport News	1250
Camp Pickett	100
Chincoteague	
Washington	
Hanford-Dennewick-Pasco	800
Bremerton	750
Whidbey Island	
Othello	60
Wisconsin	
Camp McCoy	

New York lays plans to build 20 new schools

New York City Planning Commission's 1952 program for new schools will cost an estimated $59 million. The program calls for issuance of $42 million in bonds within the city's debt limit, but an additional $17 million can be borrowed outside this limit under a new city amendment. The law allows the city to issue school bonds to an extent that can be amortized by an annual $2.5 million outlay.

School construction also got a boost in other parts of the nation last week. In St. Louis, Mo., a $17.2-million school bond election to finance the building of four new schools was authorized by the U. S. Office of Education. Charles H. Christel, president of the city's Board of Education, said the authorization includes the necessary allotments of steel and other controlled building materials.

UNIT PRICES BID BY CONTRACTORS

Mountain highway, Wyo.

A 10.506-mi job at elevation 8,000-9,000 ft in heavy soils with some granite and a short working season drew 5 bidders at Wyoming's Highway Department letting, May 24, 1951. The contract went to the low bidder at $388,089 for constructing Shell-Burgess Junction in Big Horn & Sheridan Counties. A. L. Putnam is project engineer.

Work was scheduled for 130 working days. The contractor furnishes all materials. The job is 50 miles from the nearest railroad. Wages to be paid range from $2.25 for skilled labor to $1.75 for semi-skilled to $1.25 for common labor. Bidders include:

1C J. H. N. M. Monaghan, Derby, Colo.	$388,089
2 Peter Kiewit Sons, Sheridan, Wyo.	393,610
5 Taggart Constr. Co., Cody, Wyo.	457,898

Bids: 5-24-51 Item	Unit	Quantity	Unit prices 1 C	2
Excavation	cy	494,500	$0 40	$0 377
Overhaul	cy sta	503,000	0 01	0 01
Cubic yard mile haul	cy mi	154,000	0 13	0 15
Watering, emb	M gal	5,650	1 30	2 00
Pneu tired roller oper	hr	60	6 50	5 00
Equipment roller oper	hr	175	12 00	13 00
Structure excavation	cy	210	3 50	3 00
Mechanical tamping	hr	325	6 00	9 00
Class 1 riprap	cy	210	10 00	14 00
Grouted riprap	cy	105	16 00	18 00
Exc for pipe culverts	cy	1,080	2 50	3 00
Special backfill	cy	2,940	1 60	2 00
18" CMP	lf	64	3 80	4 00
24" CMP	lf	3,062	5 00	6 00
30" CMP	lf	224	6 40	8 00
36" CMP	lf	392	9 60	13 00
48" CMP	lf	376	14 00	18 00
72" CMP	lf	204	26 00	35 00
84" CMP	lf	64	50 00	50 00
120" MPCM pipe, 510-18	lf	76	69 00	85 00
Relaying pipe	lf	206	3 00	2 50
Standard R W fence	lf	14,000	0 20	0 18
Brace panels	ea	15	10 00	13 00
End panels	ea	5	13 00	16 00
R W markers	ea	80	10 00	14 00
RC project markers	ea	2	50 00	30 00
Cr grav base crse, 1" max	ton	33,500	0 95	0 85
Cr grav surf, 5 8" max	ton	3,030	2 00	3 00
Haul of surf mat'l	t mi	120,000	0 095	0 10
Watering, base	M gal	725	1 30	2 00
Roller oper, base	hr	305	7 00	6 50
Asph mat'l MC-3	ton	248	40 00	38 00
Asph mat'l MC-Prime	ton	265	40 00	35 00
Class C concrete	cy	20	80 00	60 00
Struct steel	lb	17,100	0 30	0 26
Reinf steel	lb	1,100	0 20	0 20
Old road obliteration	mi	2	200 00	350 00
Detour obliteration	mi	0 4	300 00	450 00
Cattleguards prefab	ea	2	750 00	250 00
P & M fld test lab bldg	ea	1	500 00	450 00
Misc force acct	ls	3,000	00	3,000.00
Exc for drains	cy	50	4 00	4 00
Gravel for drains	cy	40	3 00	10 00
8" Perforated C.M.P.	lf	200	1 55	3 00
R&r teleph line	mi	1 5	150 00	250 00
Sheep's foot roller oper	hr	1,000	11 00	10 50

*P&M Provide & maintain *R&R Remove & reset

Bituminous highway, Nev.

In Lyon and Churchill Counties, Nevada, the Nevada Department of Highways let 21.846 mi of bituminous surfacing on Aug. 28, 1951 to the low of four bidders at $489,850. H. D. Mills is State Highway Engineer.

Bids for furnishing equipment include operators. Measurement is based on hours of actual operation in productive work ordered by engineer.

Wage rates prevailing include: skilled minimum $1.65, up to $2.50 for tractor operator with scraper or drag type shovel or tandem; $2.25 for "pulls"; $1.675-1.875 for 6-18cy dump trucks; $2.10 for asphalt or crushing plant engineer; $1.50 for intermediate labor including asphalt raker and $1.525-1.625 for dump trucks under 6cy; $1.30 for unskilled labor.

Bidders include:

1C Silver State Constr. Co., Fallon, Nev.	$489,850
2 Isbell Constr. Co., Reno, Nev.	512,489
4 Gibbons & Reed Co., Salt Lake City, Utah	586,643

Bids: 8-28-51 Items	Unit	Quantity	Unit prices 1 C	2
95 hp tractor & carryall	hr	100	$15 00	$18 00
Motor grader with scarifier	hr	180	12 00	12 50
1 1 2 ton dump truck	hr	300	3 00	5 00
Detour surface	ton	25,290	0 65	0 80
Dtr surf (fine agg type)	cy	1,680	3 00	4 00
Liq asph, type SC-3 (dtrs)	ton	556	27 00	28 00
Roadmix detours	mi	3 80	800 00	650 00
Signs	ls		500 00	2,500.00
Pilot car	hr	600	2 50	4 00
Flagmen	fa		2,000.00	2,000.00
Remove culvert pipe	lf	1,058	1 00	1 50
Remove headwalls	ea	35	25 00	15 00
Roadway excavation	cy	158,680	0 19	0 27
Drainage excavation	cy	580	0 50	0 75
V-type ditches	sta	6	10 00	6 00
Slope rounding	sta	110	5 00	10 00
Overhaul	yd sta	567,900	0 02	0 015
Overhaul	yd mi	20,340	0 20	0 20
Structure excavation	cy	1,440	2 00	1 50
Backfill	cy	1,330	1 00	1 00
Foundation fill	cy	110	5 00	2 00
Reshape roadway	mi	7 03	350 00	650 00
Water	M gal	15,149	0 50	1 00
Furn water equip	ls	1	10,000.00	2,500.00
Power roller	hr	798	6 00	6 50
Pneu-tired roller	ft hr	9,216	0 75	0 65
Type 1 gravel base	ton	46,800	0 60	0 47
Type 2 grav base, one inch	ton	36,870	0 75	0 80
Liq asph, type MC-1,prime	ton	344	33 00	31 00
Sand blotter	cy	300	2 00	4 00
Emuls asph (seal shldrs.)	ton	150	35 00	36 00
Emuls asph (seal)	ton	380	35 00	36 00
Screenings	ton	2,470	3 00	4 00
Liq asph, type SC-6 (plnt mx)	ton	3,494	25 00	25 50
Cl F-2 plantmix surf	ton	66,500	2 20	2 30
Spec cl A concrete	cy	83	100 00	70 00
Reinforcing steel	lb	4,090	0 15	0 13
18" R C pipe	lf	60	6 00	4 50
24" R C pipe	lf	858	7 00	5 80
30" R C pipe	lf	12	9 00	9 00
36" R C pipe	lf	430	12 00	10 25
Relay culvert pipe	lf	133	2 00	2 00
Grouted hand-laid riprap	cy	3	30 00	25 00
Culv markers & guide posts	ea	263	6 00	6 00
Stripping deposits	cy	12,400	0 20	0 21
Paved berms	lf	7,100	0 50	0 55
Paved ditches and dikes	sy	430	0 50	1 50

Service station, Nev.

Contract for adjusting a Shell service station in Las Vegas, Nev. to new highway alignment was awarded by the Nevada Department of Highways November 1, 1951. Unit prices in the bids show costs of moving pumps, tanks, lighting and of removing and replacing surfacing.

Bidders were:

1C Ben O. Davey, Las Vegas, Nevada	$9,744
2 Longley Construction Co., Las Vegas, Nevada	13,325
3 Markwart-Sherwood Co., Inc., Fresno, Calif.	15,980

Bids: 11-1-51 Items	Unit	Quantity	Unit prices 1C	2
Remove tanks	ea	4	$75 00	$100 00
Remove gasoline pumps	ea	3	20 00	50 00
Remove concrete	sy	146	2 00	2 00
Remove asphalt surface	sy	306	0 50	0 75
Move floodlight poles	ls		275 00	300 00
Class F-2 plantmix surface	sy	450	2 76	1 50
Class A concrete	cy	34	26 00	60 00
Move service sta bldg	ls		4,800 00	6,739 00
Move pump canopy	ls		225 00	350 00
F&i gasoline tanks	ea	4	219 00	450 00
Inst undergrnd storage tank	ls		335 00	100 00
Install gasoline pumps	ea	4	25 00	25 00
Install bumper rail	ls		230 00	150 00

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MAINE—State Hy. Comm., State House, Augusta. H. E. Sargent, Inc., Stillwater, Me., CA $71,370, bit. surf. 1.477 mi., road, F. A.-Secondary Proj. S 0215 (2), Liberty. Bids Nov. 28. CD 11/20.

RHODE ISLAND—State Hy. Dpt., State House, Providence.

General Engr. & Contg. Co., 12 Stukeley St., Providence, R. I., CA $73,350, R. I. Contr. 5152, bridge repairs, Brown St.-Wickford Bridge No. 10, North Kingstown, Washington Co. CD 6/31, under LB.

† Rev-Lyn Contr. Co., 9 Hudson St., Lynn, Mass., LB $392,000, maintenance dredging, entrance channel to Great Salt Pond and the Harbor of Refuge, Inv. 19-016-52-14, RHODE ISLAND, U. S. Eng., 257 Commonwealth Ave., Boston, Mass. Bids Nov. 23.

Western Foundation Corp., 2 Park Ave., New York, N. Y., LB $103,167, Contr. 51.15 foundation piles, proposed sewage treatment plant, East Hartford, HARTFORD, CONN. Bd. Contr. & Supply, 115 Broad St., Hartford, Conn. Bids Nov. 15. CD 11/8.

BUILDINGS

LOW BIDS AND CONTRACTS

J. F. Rand & Son, 57 Sudbury St., Boston, Mass. CA Approx. $314,000, SCHOOL addn., LINCOLN, MASS., Town Supt. Schools, Lincoln, Mass. CD 10/30, under CA.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

† N. Y., Binghamton—WAREHOUSE, etc.—B.A. 12/26—General Services Admin., General Services Bldg., 19 and F Sts. N. W., Wash. 25, D. C., Warehouse No. 1, pumphouse and reservoir for the G. S. A. Warehouse Facility, Proj. No. 30-303. Plans deposit $10.

▲ N. J., Atlantic City—HOUSING—B.A. 1/30—Atlantic City Housing Auth., 2311 Fairmont Ave., 400 unit housing, Client, etc., $2,500,000. Architects, L. Brooks, 1616 Pacific Ave., Atlantic City, and Churchill & Fulmer, 19 W. 4 St., New York, N. Y., archts. CD 3/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Oakhill Constr. Co., Inc., 74-20 Caldwell St., Maspeth, N. Y., LB $560,285, storm sewer, Oceana St., 48 Ave., 210 St., etc., Queens Boro, NEW YORK. President Queens Boro, 162-15 Queens Blvd., Kew Gardens 15, N. Y. Bids Nov. 29. CD 11/21.

Shanahan Constr., Inc., 109 Canal St., Ellenville, N. Y., CA $733,275, Contr. 387, clearing approx. 1,150 acres, grubbing about 475 acres and required excavation, seeding, removal of excrementitious material, The Neversink Reservoir, in preparation for storage of water in town of Neversink, NEW YORK, N. Y. Bd. Water Supply, 120 Wall St., New York 5, N. Y. Bids Oct. 23. CD 10/29, under LB.

Chapman Valve Mfg. Co., 203 Hampshire St., Indian Orchard, Mass., CA $879,116, Cont. 412, furnishing, testing, del. eight 48 in. and two 36 in. steel motor-operated conical plug valves, two 42 in. and one 12 in. c.i. motor-operated conical plug valves, one 14 in. c.i. manually-operated conical plug valve, one 20 in. c.i. motor-operated gate valve, pipe couplings and misc. valves for installation in the intake and outlet chambers of the Neversink Tunnel, The Downsville regular water chamber and the outlet chamber of the East Delaware Tunnel of the Delaware Aqueduct, NEW YORK, N. Y. Bd. Water Supply, 120 Wall St., New York 5, N. Y. Bids Oct. 9. CD 10/15, under LB.

John Roman, Inc., 103 E. 125 St., New York 35, N. Y., CA $588,470, superstructure for connections to Henry Hudson Parkway, Stage 1, at Manhattan Approaches to George Washington Bridge, Contr. GWB 110.002, NEW YORK, N. Y. Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids Oct. 15. CD 10/19, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Poly & Fuhrman, Inc., 515 7th Ave., New York, N. Y., LB $1,141,000, SCHOOL, P. S. 249, 48 Ave. and 40 St., Queens Boro, NEW YORK, Supt. School Bldg., Design and Construction, 49 Flatbush Ave. extn., Brooklyn 1, N. Y. Bids Nov. 29. CD 11/12.

▲ Murray Lipton & Morton Goldberg, c/o Savy & Arnoff, Worth, 44 Court St., Brooklyn 2, N. Y., Owner Bonds, Approx. $1,000,000, 6 story APARTMENT, 68 St. and Shore Rd., BROOKLYN, N. Y. CD 9/27.

▲ Bello Co., Broad St. Bank Bldg., Trenton, N. J., CA $2,227,000, general contract, 8 story, 300-bed St. Francis HOSPITAL, addn., Hamilton Ave. and Chambers St., TRENTON, N. J. Sisters of St. Francis, Glen Riddle, Pa. CD 11/5, under LB.

New Cumberland Joint School Dist., New Cumberland, Pa., rejected bids Aug. 23, general const., Junior HIGH SCHOOL, west of Branch Ave. between Beacon Hill Rd. and 7th St., NEW CUMBERLAND, PA. LB $824,659. CD 8/28, under LB.

▲ Ferro Concrete Constr. Co., 203 W. Third St., Cincinnati, O., CA, Approx. $5,500,000, tank engine PLANT, Glendale-Milford Rd., Evendale, WILLIAMSPORT, PA. Avco Manufacturing Co., 1329 Arlington St., Cincinnati, 25, O.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Virginia—SIGNAL LIGHTS, etc.—B.A. 12/18—State Hy. Dpt., Richmond. 12 traffic signal lights Route 244 on Columbia Pike between South Quinn St. and the W. & O. D. railroad crossing; Arlington Co.; new piles and repairs at Hampton Roads ferry slips at Pine Beach and Newport News, some 400 old piles on the Norfolk side and 300 on the Newport News side to be removed and replaced with new clusters, approx. 3,000 board ft. of dolphins on the Norfolk side and 2,000 ft. at Newport News for the maintenance repairs, Norfolk and Newport News.

La., New Orleans—B.A. 12/28—City, City Hall, Gentilly Blvd. New Orleans Terminal Co. underpass, $900,000. Plans deposit $50. G. A. Heft & Co., 820 Union St., engrs. CD 2/4/49.

† Ga., Valdosta—AIRFIELD LIGHTING, etc.—B.A. 1/3—U. S. Eng., Post Office Bldg., Savannah, airfield lighting and constr. night lighting bldg. at Moody Air Force Base, Eng. 09-133-52-40.

† Ga., Valdosta—RUNWAY EXTEN.—B.A. 1/5—U. S. Eng., Post Office Bldg., Savannah, runway extensions NS-W, taxiway extension and GCA hardstands at Moody Air Force Base, Eng. 09-133-52-38.

† Ga., Savannah—FUEL STORAGE, etc.—B.A. 1/7—U. S. Eng., P.O. Bldg., ATO fuel storage and ammunition storage facilities, Hunter Air Force Base, Eng. 09-133-52-25. Extended date. CD 11/1.

† Kentucky—B.A. 1/9—U. S. Eng., 830 W. Broadway, Zone 3, 2 concrete substructure, brick superstructure walls pumping plant structures, misc. piping, valves, equipment, transformer sub-stations for pumping plants at Fourth and Buchanan Sts., CIV-ENG 15-029-52-61. Plans deposit $15. Bids 6/27 rejected. CD 6/13, under LB.

† Ga., Valdosta—RADIO and RADAR SHOPS—B.A. 1/10—U. S. Eng., Post Office Bldg., Savannah, radio and radar shops at Moody Air Force Base, Eng-09-133-52-41.

BIDS ASKED—BUILDINGS

N. C., Raeford—SCHOOL—B.A. 12/18—Hoke Co., Raeford Rockfish School addns., Plans deposit $40. W. D. Harper & Sons, Florence, S. C., archts.

Tenn., Jackson—HOSPITAL—B.A. 12/21—Madison Co. and City, Jackson, Jackson-Madison County Hospital addn., $604,000. CD 10/18.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Ala., Decatur—HOUSING—B.A. 1/8—Decatur Housing Auth., Decatur, Project Ala 48-2, 105 housing units $800,000. Extended date. Albert R. Frahn & Assocs., Decatur, archts. CD 8/17.

† Ky., Fort Knox—POST SIGNAL CENTER—B.A. 1/11—U. S. Eng., 830 W. Broadway, Louisville, Zone 1, 2 story, rein.-con., 9,600 sq. ft. post signal center bldg., Eng. 15-029-52-37. Plans deposit $15. CD 11/23.

▲ Tenn., Memphis—HOUSING—B.A. 1/1—Memphis Housing Auth., 264 N. Lauderdale St., 450 family housing, on 22 acre site, Thomas and 7 Sts. $5,500,000. James A. Fowler, asst. dir. CD 5/1/51.

SOON LETS CONTRACT—BUILDINGS

La., New Orleans—WAREHOUSE—National Biscuit Co., Julia and Tchoupitoulas Sts., soon lets contract, warehouse addns., alterations. Jules K. de la Vergne, Pere Marquette Bldg., archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Perry M. Alexander Constr. Co., McIntyre Bldg., Asheville, N. C., LB $74,794, landscaping for West Asheville housing, ASHEVILLE, N. C. Asheville Housing Auth., City Hall, Asheville, N. C. Bids Nov. 6. CD 11/1.

Southeastern Contg. Co., 2809 Balmoral Rd., Birmingham, Ala., CA $45,084, water distr. sys., TRAFFORD, ALA., City, Trafford, Ala.

† Anderson-Gibbs Corp., 715 N. Drennen St., Houston, Tex. CA $413,721, approx. 770,000 cu. yd. hydraulic fill, Proj. S-2-50, Jefferson Parish, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans 9, La. Bids Oct. 10, awarded Nov. 10. CD 10/1.

Dravo Corp., Dravo Bldg., Pittsburgh, Pa. CA $100,000, loading dock, Doe Run, BRANDENBURG, KY. Mathieson Hydro-Carbon Corp., 60 E. 42 St., New York, N. Y.

▲ Leonard Constr. Co., 37 S. Wabash St., Chicago, Ill. CA $8,000,000, exten. PLANT for manufacturing hydrofluoric acid, sulfuric acid, chlorine and caustic soda, CALVERT CITY, KY. Pennsylvania Salt Co., Widener Bldg., Phila., Pa.

† Breslin Constr. Co., 433 S. Preston St., Louisville, Ky., CA $985,197, bit. runway, taxiway, apron extensions at Fort Campbell Air Force Base, Eng. 15-029-52-36, FORT CAMPBELL, KY. U. S. Eng., 830 W. Broadway, Louisville 1, Ky. CD 11/30, under LB.

S & W Constr. Co., Shrine Bldg., Memphis, Tenn., CA $500,000, 2-branch steel, concrete BANKS, MEMPHIS, TENN., National Bank of Commerce, 45 S. 2nd St., Memphis, Tenn. Hanker & Heyer, Commerce Title Bldg., Memphis, Tenn., engrs.-archts. Awarded Nov. 28.

G. E. Moore Co., Greenwood, S. C., CA $274,687, sanitary sewers, sewage treatment plant, WAYNESBORO, TENN. City, Waynesboro, Tenn. Bids Nov. 23. CD 11/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ C. M. Guest & Sons, Greensboro, N. C. CA Approx. $1,000,000, OFFICE bldg., CHARLOTTE, N. C. Jefferson Standard Life Insurance Co., Johnston Bldg., Charlotte, N. C.

J. Y. Phelps, 2900 Wade Ave., Raleigh, N. C., Owner builds. Approx. $350,000, APARTMENT development, RALEIGH, N. C.

Bailey-Brazell Constr. Co., P. O. Box 386, Greenville, S. C., CA $810,000, 120 HOUSING units, LAURENS, S. C. Laurens Housing Auth., Laurent, S. C. Bids Nov. 19. CD 11/27, under LB.

Beers Constr. Co., 70 Ellis St., Atlanta, Ga., CA $354,745, HOUSING units, AMERICUS, GA. Americus Housing Auth., Americus, Ga. Bids Nov. 27. CD 11/2.

J. F. Holley, 905 6 Ave. N., Birmingham, Ala., LB $406,925, HOSPITAL, ONEONTA, Ala. Blount Co. Hospital Auth., Oneonta, Ala. Bids Nov. 27. CD 10/31.

▲ Shelby Constr. Co., 1108 Canal St., New Orleans, La., LB $1,457,504, High SCHOOL, BURAS, LA. Plaquemines Parish School Bd., Pointe-a-la Hache, La. Bids Nov. 27. CD 11/9.

Lionel F. Favret Co., 937 Grover St., New Orleans, La., LB $971,100, Taylor Park Uptown Negro Elementary SCHOOL, NEW ORLEANS, LA. Orleans Parish School Bd., 703 Carondelet St., New Orleans, La. Bids Nov. 27. CD 11/19.

Dearborn Machinery Movers Co., Inc., 3800 Maple St., Dearborn, Mich. CA Approx. $100,000, simple bldg. at Michoud PLANT, NEW ORLEANS, LA. Chrysler Corp., Richards Bldg., New Orleans, La. CD 6/22.

Robert Angelle, Breaux Bridge, La., CA $425,556, classroom-auditorium at Rayne High SCHOOL, RAYNE, LA. Acadia Parish School Bd., Crowley, La. Bids Nov. 26. CD 8/3.

† Robert E. Maxey Constr. Co., Tullahoma, Tenn., CA $447,336, CAFETERIA at Arnold Engineering Development Center, Inv. 52-17, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn., Bids Nov. 27. CD 11/8.

(Continued on page 92)

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(Continued from page 90)

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Ind., Lawrence—B.A. 12/20—Bd. Town Trustees, Leon Herr, clk., Lawrence, sewage treatment plant and sewerage sys., $400,000. Plans deposit $50. Boyd Phelps & Assocs., Ind. Pythian Bldg., Indianapolis, Zone 4, consult. engrs.

▲ Ind., Indianapolis—B.A. 12/24—Bd. P. Wks., E. A. Gardner, chm., City Hall, Zone 4, main sewer 35 St. to Temple Ave., $1,400,000. Bids Nov. 15 rejected. W. R. Hunt, City Hall, city engr. CD 11/20, under CA.

▲ Ind., Gary—Bids Asked—Gary-Hobart Waterworks, H. T. Rudgal, mgr., Gary, filtration plant, $2,500,000. Northern Ind. Public Service, 500 Broadway, consult. engr. CD 12/6/50.

BIDS ASKED—BUILDINGS

Ind., Elkhart—SCHOOL—B.A. 12/4—Bd. School Trustees, High School Bldg., brick Junior High School, $600,000. Maurer & Maurer, 312 Lafayette Bldg., South Bend, archts. CD 9/19.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—State Hy. Dpt., T. J. Kauer, Columbus, O. Heffner Constr. Co., Celina, O., CA, $1,052,948, est. $1,123,700, b. conc. 8.481 mi. U. S. Rte. 30-N in village Crestline, Crawford Co. and Sandusky and Springfield Twps., Richland Co. Bids Nov. 20. CD 11/27, under LB.

INDIANA—State Hy. Comn., State House Annex, Indianapolis, Zone 4,

Calumet Paving Co., Zionsville, Ind., CA, $875,673, est. $1,000,440, c. conc. 7.926 mi. State Rd. 37 Orleans to Mitchell, Lawrence Co. Bids Oct. 16. CD 10/19, under LB.

▲ ILLINOIS—State Div. Hys. & Dpt. P. Wks., Centennial Bldg., Springfield.

Great Lakes Dredge & Dock Co., 122 S. Michigan Ave., Chicago 3, Ill., LB, $1,858,436, substructure for new highway bridge over Illinois River on U. S. 67 and Ill. 100, Beardstown, Cass and Schuyler Counties. Bids Nov. 30. CD 11/23.

▲ ILLINOIS—State Div. Hys. & Dpt. P. Wks., Centennial Bldg., Springfield.

J. C. O'Connor & Sons, Inc., 2104 Miner St., Wayne, Ind., LB, $1,485,655, c. conc. 8.18 mi. U. S. 5 Clay and Richland Counties;

Edwardsville Constr. Co., 309 Bk. of Edwardsville Bldg., Edwardsville, Ill., LB, $126,170, c. conc. base course wid'n 8.97 mi. Ill. 100, Madison and Jersey Counties; LB $89,747, c. conc. base course wid'n 5.81 mi. Ill. 1 Jersey Co.;

M. Hoefken Co. and Hoefken Bros. Inc., 22 W. "B" St., Belleville, Ill., LB, $231,909, c. conc. base course wid'n 10.28 mi. U. S. 50, St. Clair Co.;

Moore Bros. Inc., 2000 St. Clair Ave., East St. Louis, Ill., LB, $160,836, c. conc. base course wid'n 8.93 mi. Ill. 15, St. Clair, Clinton and Washington Counties;

Sangamo Constr. Co., 700 N. MacArthur Blvd., Springfield, Ill., LB, $288,992, c. conc. base course with b. conc. surf. and structure 0.57 mi. for R. R. Subway, Sangamon Co. Bids Nov. 30. CD 11/25.

Waterbury Constr. Co., Allen Park, Mich., CA $40,300, 6- and 8-in. c. i. water main, 1,240 ft. 12- and 15-in. sewer main, ALLEN PARK, MICH., Village, R. D. Pretty, clk., Allen Park, Mich. Bids Oct. 9.

BUILDINGS

LOW BIDS AND CONTRACTS

Leslie Colvin, 507 Bd. of Trade Bldg., Indianapolis, 4, Ind., CA, $600,000, 2 story, brick, stone rein.-con. UNION BLDG. addn.; CA, $400,000, 3 story, bsmnt., brick, stone, rein.-con. LIBRARY, CRAWFORDSVILLE, IND. Wabash College, Frank Sparks, pres., Crawfordsville, Ill. Eric Gugler, 101 Park Ave., New York, N. Y., archt. CD 5/3/48.

Leslie Colvin, 507 Bd. Trade Bldg., Indianapolis, 4, Ind., CA, Approx. $300,000, 1 and 2 story, stone, brick, concrete CHURCH, HUNTINGTON, IND., First M. E. Church, Rev. E. E. Kaufman, pastor, Huntington, Ind. C. Aiden Meranda, 301 Bd. Trade Bldg., Indianapolis 4, Ind., archt.

Howard Tucker Co., Mt. Clemens, Mich., CA $300,000, 2 story, bsmnt., brick and steel SCHOOL, CLINTON, MICH., Clinton Twp., Fractional School Dist. 2, Clinton, Mich. CD 10/11.

▲ C. R. Meyer & Sons Co., 50 State St., Oshkosh, Wis., CA $1,169,342, superstructure for POWER HOUSE at Hydro-electric Plant, CRYSTAL FALLS, MICH., Wisconsin-Michigan Power Co., Appleton, Wis. Bids Nov. 12, awarded Nov. 16.

Chippewa Hills, Inc., East Mt. Hope Ave., Lansing, Mich., Owner Builds, $900,000, 85 brick single HOUSES, Mt. Hope Ave., Nulett and Okemos Rds., LANSING, MICH. CD 11/13.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Tex., Abilene—B.A. 12/21—City, Austin P. Hancock, mgr., Abilene sewer interceptor on West Side, incl. approx. 20,000 lin. ft. 12- to 24-in. vitr. clay pipe, 3,380 lin. ft. 24 in. c.i. pipe, concrete pier and piling, etc. $225,000. Plans deposit $25. Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs. CD 5/19/50.

Tex., Weslaco—B.A. 1/3—City, WW imprvs., Sigler, Clark & Winston, Box 428, Weslaco, engrs.

Tex., Weslaco—B.A. 1/3—City, sewage disposal plant, $200,000. Sigler, Clark & Winston, Box 428, Weslaco, engrs. CD 9/13/50.

BIDS ASKED—BUILDINGS

▲ Tex., Longview—SCHOOLS—B.A. 12/19—Longview Independent School Dist., Longview, masonry, frame elementary schools, concrete slab fdns., Job Nos. 1, 2, 3, and 4. Approx. $300,000 each. Plans deposit $25 each. Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, engr. and archt. CD 10/29.

Tex., San Marcos—HOUSING—B.A. 1/3—San Marcos Housing Auth., San Marcos, 60-low rent housing units, $450,000. Plans deposit $25. Bentley, Broad & Nelson, 228 Reserve Loan Life Bldg., Dallas, engrs.-archts. CD 8/18/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., LB $644,789, dock refueling and fuel storage facilities at Rapid City Air Force Base, near Weaver, Inv. 52-15, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Nov. 27. CD 10/29.

† Pool Constr. Co., Shawnee, Okla., LB $136,114, flood control distr. reservoir near Cheyenne, No. 425-52, OKLAHOMA. Dpt. Agriculture, c/o Soil Conservation Service, 3600 McCart St., Fort Worth, Tex. Bids Nov. 26. CD 10/31.

Bandera Electric Co-operative, Bandera, Tex., Own Forces $69,000, 30 mi. 69 kv single and H-frame structures, 20 mi. 24 kv single pole structure with 69x72 ft. sub-station, Tex 92 K and M Bandera, Bandera Co., TEXAS. Bids Aug. 21 rejected. CD 7/23.

City, Beaumont, Tex., Force Account, $90,000, imprvs., repairs, surf. portion 100 streets, BEAUMONT, TEX. R. C. Black, City Hall, Beaumont, Tex., city engr. CD 9/7/50.

Harris County Water Control & Imprvt. Dist. 24, Bellaire, Tex., Force Account, $100,000, addnl. water lines, BELLAIRE, TEX. Frank J. Metyko, Scanlan Bldg., Houston, Tex., engr. CD 1/31/51.

Harris County Water Control & Imprvt. Dist. 24, Bellaire, Tex., Force Account, $90,000, addnl. units street asph. paving, BELLAIRE, TEX. Frank J. Metyko, Scanlan Bldg., Houston, Tex., engr. CD 1/31.

City, Bryan, Tex., Force Account, Approx. $65,000, sanitary sewer lines, trench and backfilling, BRYAN, TEX. City Bryan Tex. Bids Oct. 12. CD 10/3.

City, Eagle Pass, Tex., Own Forces, Approx. $60,000, addnl. sanitary sewer unit, EAGLE PASS, TEX. The Marvin Turner Engineers, Nalle Bldg., Annex, Austin, Tex., engrs.

(Continued on page 94)

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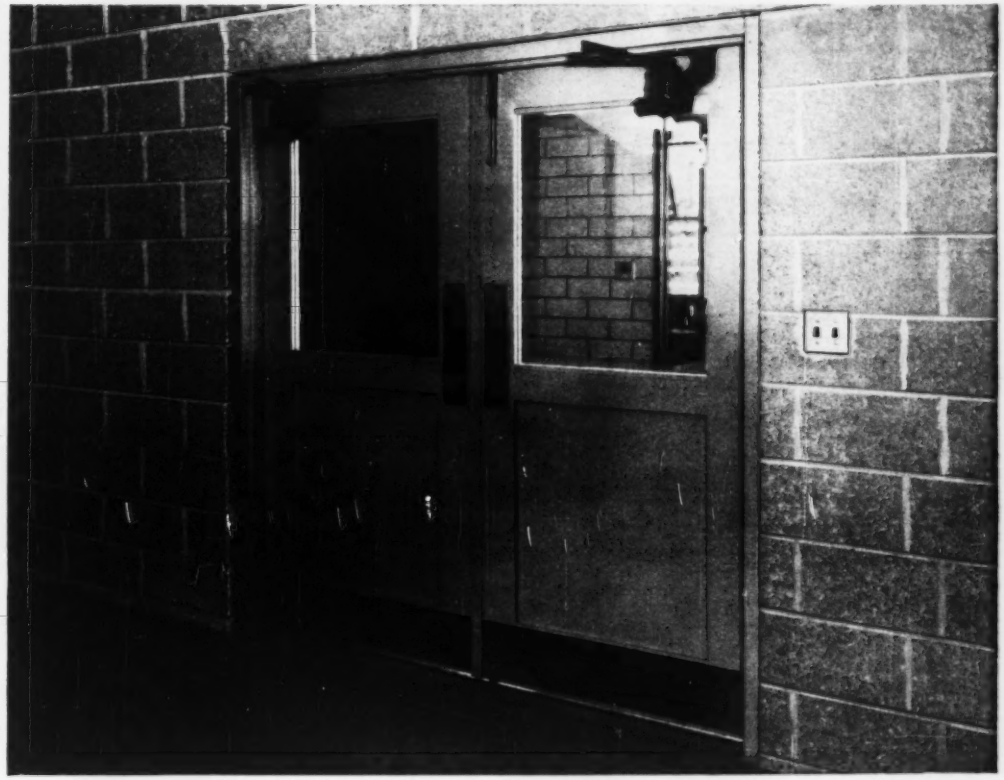

COMPLETE FENESTRA DOOR UNIT, one of 135, in Robert N. Mandeville High School, Flint, Mich. *Architect:* Bennett & Straight, Dearborn, Mich. *Contractor:* Karl B. Foster, Flint.

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(Continued from page 92)

City, Eagle Pass, Tex. Own Forces. $75,000. asph. street paving unit, EAGLE PASS, TEX. The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, Tex., engrs.

Ottinger Constr. Co., 3101 Camp Bowie Blvd., Fort Worth, Tex., LB $324,451, est. $400,000; four-lane bridge over Trinity River on E. 4 St., FORT WORTH, TEX. Tarrant County Water Control & Imprvt. Dist. 1, c/o Joe B. Hogsett, pres., 502 Danciger Bldg., Fort Worth, Tex. Bids Nov. 27. CD 10/31.

Frank W. Sharp, 2202 Rossiyn Ave., Houston, Tex. Own Forces. $48,500. water lines, HOUSTON, TEX.

Frank W. Sharp, 2202 Rossiyn Ave., Houston, Tex. Own Forces. $67,500. sanitary sewers, HOUSTON, TEX.

Frank W. Sharp, 2202 Rossiyn Ave., Houston, Tex. Own Forces. Approx. $52,500. site earthwork, grading, leveling, drainage, HOUSTON, TEX.

Frank W. Sharp, 2202 Rossiyn Ave., Houston, Tex. Own Forces. street constr. and paving, 300-acre tract, HOUSTON, TEX. CD 9/14.

City, Killeen, Tex. Purchase and Hire. $35,000. some distr. lines and sys. rehabilitation, KILLEEN, TEX.

City, Killeen, Tex. Own Forces. Approx. $67,500. street imprvs. and surf., KILLEEN, TEX. CD 9/17.

City, San Marcos, Tex., Purchase and Hire. $42,500. addnl. water distr. lines, SAN MARCOS, TEX. R. C. Daniels, res. engr. CD 11/2/50.

City, San Marcos, Tex., Purchase and Hire. $65,000. addnl. sanitary sewer collection lines, SAN MARCOS, TEX. R. C. Daniels, res. engr. CD 11/2/50.

City, Texarkana, Tex. Own Forces. $35,000. Proj. 2 addnl. water sys. rehabilitation, north area of TEXARKANA, TEX. CD 11/1.

City, Texarkana, Tex. Own Forces. $60,000. Proj. 4 some sanitary sewer rehabilitation work, north area of TEXARKANA, TEX. CD 11/1.

BUILDINGS

LOW BIDS AND CONTRACTS

Frozen Food Products Co., Eagle Pass, Tex. Own Forces. $90,000. frozen food products PLANT unit, EAGLE PASS, TEX. CD 8/20.

▲† A. S. Horner Constr. Co., 118 S. Pecos St., Denver, Colo., LB $2,324,224, constr. Alcova power plant and appurtenant works, Kendrick Proj., downstream from Alcova Dam, approx. 30 mi. southwest of Casper, spec. DC-3564, Wyoming. Bureau Reclamation, Dpt. Interior, Casper, Wyo. Bids Nov. 28. CD 10/9.

FAR WEST

BIDS ASKED—BUILDINGS

Ala., Evergreen—HOSPITAL—B.A. 12/21—Conecuh Co., Evergreen, hospital, $300,000. Plans deposit $10. Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, archts.

† Calif., Fort Ord—BARRACKS, etc.—B.A. 12/24—Dpt. Army, Purch. & Contg. Office, Fort Ord, rehabilitation of WAC barracks, installing exterior security lights in WAC area, etc., in Marin Garrison.

SOON LETS CONTRACT—BUILDINGS

▲ Wash., Seattle—ENGINEERING—Boeing Airplane Co., 7755 E. Marginal Way, soon lets contract, 5 story, 200x400 ft. engineering bldg. addn. $2,500,000. J. W. Maloney, Central Bldg., archt. CD 11/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Utah Constr. Co., 57 E. 4th South St., Salt Lake City, Utah, LB $500,000, construct earth-fill dam, 86 ft. high and 600 ft. long across top, SUNNYSIDE, UTAH, Geneva Steel Co. & Kaiser Steel Corp., c/o Templeton & Lake, engrs., 411 Dooly Bldg., Salt Lake City, Utah.

UTAH—State Road Comn., State Capitol, Salt Lake City.

Parson & Fife Constr. Co., Brigham City, Utah, CA, $493,912, est. $476,557, construct 4.536 mi. 3 in. plant mix bit. road between 11th East and Parley's Canyon, FAP No. U-164 (4), Salt Lake Co.;

W. W. Clyde & Co., Springville, Utah, CA, $497,739, est. $488,412, construct 10.141 mi. 2½ in. road mixed bit. road between Monticello and Peter's Hill, FAP F-7 (6), San Juan Co. Bids Nov. 20. CD 11/12.

NEVADA—State Hy. Dpt., State Office Bldg., Carson City.

Isbell Constr. Co., P.O. Box 2351, Reno, Nev., CA, $415,577, constr. 8.7 mi. road between Whitehorse Pass and 19 mi. south of Wendover, Elko Co.;

Wells Cargo, Inc., 1775 E. 4 St., Reno, Nev., CA, $110,526, 5.8 mi. road between Comet Mine and 5.5 mi. south, Lincoln Co. Bids Nov. 23. CD 11/14.

▲† General Electric Co., Public Service Bldg., Portland, Ore., CA, $2,223,530, three 42,222 kva. generators for Lookout Point Dam, CIVENG 35-026-52-79, Lane Co., OREGON. U. S. Eng., Pittock Block, Portland, Ore. CD 11/2, under LB.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento, Calif.

Griffith Co., S. Broadway, Los Angeles, Calif., LB, $817,166, c. conc. on cement treated subgrade surf. existing pavement with plant mix surf. over untreated rock base, drainage structures 5.5 mi. between McFarland and Delano Underpass, Kern Co. Bids Nov. 21. CD 10/31.

State Div. Hys., P. Wks. Bldg., Sacramento, Calif., rejected bids Nov. 14, install traffic signals, lights etc. at intersection of Auburn Blvd. and Fulton and Watt Aves., Sacramento Co., CALIFORNIA LB $468,301. CD 11/27, under LB.

Gardner & McCall, 3724 Atlantic Blvd., Long Beach, Calif., LB, $124,594, est. $100,000, pump station and piping for Storm Drain Pump Dist. 6, LONG BEACH, CALIF., City, 205 W. Broadway, Long Beach, Calif. Bids Nov. 19. CD 11/9.

Engineers Limited Pipeline Co., 2128 San Pablo Ave., El Cerrito, Calif., LB, $41,466, installing 6,255 lin. ft. 16 in. c.i. and welded steel watermains in Alameda County, OAKLAND, CALIF. East Bay Municipal Utility Dist. 516, 16 St., Oakland, Calif. Bids Nov. 23. CD 11/9.

Chas. L. Harney, Inc., 575 Berry St., San Francisco, Calif., LB, $258,501, grading, paving, etc., Guerrero St. and San Jose Ave. between Army and Randall Sts., SAN FRANCISCO, CALIF. Dp. P. Wks., City Hall, San Francisco, Calif. Bids Nov. 21. CD 11/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Anaconda Copper Mining Co., 25 Broadway, New York, N. Y., Separate Contracts under owner's supervision, Est. $33,000,000. Zinc Mining and Sulphur PLANT, YERINGTON, NEV.

V. O. McVickers, Richland, Wash., Day Labor, $350,000 APARTMENT HOUSE, RICHLAND, WASH. CD 11/16.

Housing Auth. of Kern Co., 517 Roberts Lane, Bakersfield, Calif., cancelled bids Aero Vista HOUSING Project Cal. 8-5, Oildale, BAKERSFIELD, CALIF. CD 11/27.

▲ Whittemore Homes, 2501 S. Chester Ave., Bakersfield, Calif., Owner Builds, $3,000,000, 297 frame, stucco DWELLINGS in Planz Park, BAKERSFIELD, CALIF. H. J. Bissner, 3858 E. Colorado St., Pasadena, Calif., archt.

L. C. Nelson & Sons, Selma, Calif., LB, $614,800 SCHOOL, Madison and Bradley Aves., near FRESNO, CALIF. Madison Elementary School Dist., 1628 White St., Fresno, Calif. Bids Nov. 20. CD 11/9.

▲ Oppenheim & King, P.O. Box 1902, Fresno, Calif., CA, $1,156,216, HOUSING Projects Cal 6-7 and Cal 6-10, FRESNO, CALIF. Public Housing Auth., 2511 Vassar Terrace, Fresno, Calif. Bids Nov. 8, awarded Nov. 26. CD 11/15, under LB.

Paul W. Speer, Inc., 4201 Sunset Blvd., Los Angeles, Calif., CA, $343,800, Roosevelt SCHOOL addns., 3533 W. Compton Blvd., LAWNDALE, CALIF. Lawndale School Dis., 4110 W. 145 St., Lawndale, Calif. Bids Oct. 11, awarded Nov. 15. CD 4/9.

Zoss Constr. Co., 1037 N. Cole Ave., Los Angeles, Calif., CA, $523,720, NURSES RESIDENCE, LOS ANGELES, CALIF. Bd. Supervs. Los Angeles Co., 501 Hall of Records, Los Angeles. Bids Oct. 9, awarded Nov. 15. D 10/16, under LB.

▲† Peter Kiewit Sons Co., P. O. Box 748, Arcadia, Calif., LB, $3,532,290, Sch. A, rein.-con. walls;

Barrett & Hilp, Theo. Meyer, Bechtel Corp. and Chas. L. Harney, Inc., 918 Harrison St., San Francisco, Calif., LB $3,723,633, Sch. B, conc. block walls, for 3 general purpose WAREHOUSES at Sacramento Signal Depot, Spec. 1570, SACRAMENTO, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Nov. 20. CD 10/29.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† Alaska—OUTSIDE UTILITIES—B.A. 12/21—U.S. Eng., (APO) 942, c/o PM, Seattle, Wash.) Anchorage, outside utilities, 1st increment of 1952 utilities at Elmendorf Air Force Base, Inv. No. S95-507-52-33. Plans deposit $25. CD 11/16.

† Alaska—AUTOMOTIVE MAINTENANCE FACILITY—B.A. 1/8—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, automotive maintenance facility, Elmendorf Air Force Base, S95-507-52-10. Plans deposit $25. CD 9/13, under LB.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

Ball Bros. Ltd., 49 King St. E., Kitchener, Ont., CA, Approx. $300,000 two-company ARMORY, OWEN SOUND, ONT. Defence Constr. Ltd., 441 Queen's Quay W., Toronto, 2B, Ont. R. P. Opie, c/o owner, engr.

PROPOSED PROJECTS

WATER SUPPLY

Ark., Arkadelphia—General Waterworks Corp., 701 Main St., imprv. water sys. $172,000.

Ark., El Dorado—General Waterworks Corp., 701 Main St., Pine Bluff, imprv. water sys. $450,000.

Ark., Russellville—General Waterworks Corp., 701 Main St., Pine Bluff, imprv. water plant, $225,000.

Calif., Brea—City, 401 S. Pomona Ave., voted $140,000 bonds, water sys. imprvs. Frank Alderman, 1520 Oxley South, Pasadena, consult. engr. Sidney Lowry, 133 E. 11 St., Santa Ana, engr. CD 9/25.

Calif., Compton—City, voted $500,000 bonds, water sys. imprvs. Don W. Robin, c/o owner, engr. CD 12/12/45.

Calif., San Clemente—City, $427,000 bond election Jan. 8, 1952, water sys. imprvs. CD 10/25.

La., Jonesboro—Town, Town Hall, $175,000 bond election Jan. 3, water and light plant. CD 7/30.

Mass., South Hadley—Town Bd. Water Comrs., Town Hall, water main exten., 7 mi. 16 in. cement pipe, Fire Dist. 1, $350,000, Tighe & Bond, 189 High St., Holyoke, consult. engrs.

N. C., Greensboro—City, City Hall, water supply imprvs. at Lake Brandt. $500,000. CD 4/7/47.

Tex., Baytown—City, defeated bonds, WW expansion $400,000; water rehabilitation, $125,000. George M. Millyer, city engr. CD 11/5.

▲ Tenn., Columbia—City, filtration plant and distr. sys. $1,100,000. Pole, Powell & Hendon, Stallings Bldg., Birmingham, Ala., consult. engrs.

Tex., Lake Worth—Village, A. W. Mills, mayor, Lake Worth, via Fort Worth, (1) elevated steel storage tank and tower, $75,000 (2) water supply sys., $150,000 (3) c.i. mains, distr. sys., fire plugs, $200,000. Scott, Palmer & Gregory, 3400-B Camp Bowie Blvd., Fort Worth, consult. engrs. CD 11/13.

▲ Tex., Mineola—Wood Co., Mineola, domestic water supply reservoir of 5,000 to 6,000 acres in size. $3,500,000. water supply main, $1,000,000.

Va., Chatham—City, voted bonds, water filtration plant, $150,000.

▲ Alta., Edmonton—City, G. S. Doherty, clk. installing feed mains, $370,000; installing service mains, $347,000; renewal and enlargement of mains, $200,000; misc. installations, $217,000.

Ont., Fort Erie—Bertie Twp., K. S. Ellsworth, clk. Fort Erie, WW intake, stand-pipe and WW section outside of Ridgeway. $560,000. C. R. Hagey, c/o owner, engr.

Ont., Ridgeway—Bertie Twp., K. S. Ellsworth, clk., Ridgeway, WW sys., intake, stand-pipe and water works section outside town. $560,000. CD 12/15/50.

SEWERS, WASTE DISPOSAL

▲ Calif., Hayward—City, City Hall, sewage treatment plant. $1,360,000. Harry N. Jenks, 63 Crescent Dr. Palo Alto, consult. engr. CD 2/26/47.

Calif., Manhattan Beach—City, 1400 Highland Ave., sanitary sewers in Peck Ave. and other streets, $113,646. Frederick C. Butcher, c/o owner, engr.

Ind., Fort Wayne—Bd. P. Wks., City Hall, storm sewer for Forest Park and Lakeside Areas, 48 in. sewer from State Blvd. south on Forest Park Blvd. to Monton St. where new pumping station would be built, laterals extended east and west of Forest Park Blvd., $300,000. Clifford Franklin, city sewer utility engr. CD 7/24/46.

▲ Mass., Boston—City, P. Wks. Dpt., City Hall Annex, incinerator, Southampton St. $2,000,000, Metcalf & Eddy, 1300 Statler Bldg., consult. engrs. CD 8/30

Okla., Guthrie—City, sewage disposal plant, $300,000. J. W. Flint, city engr.

▲ Pa., Bedford—Bedford General Auth., Bedford, sewage treatment plant. $1,000,000. Sydney R. Collins, Lewisburg, engr.

Pa., Erie—City and Lawrence Twp. Comrs., Erie, sewage disposal plant addn., alterations, $400,000. Conseer, Townsend & Assoc., Clark Bldg., Pittsburgh, engrs.

Pa., Pittsburgh—Bd. Comrs. Allegheny Co., Neville Twp., Neville Island, Pittsburgh, plans by Conseer, Townsend & Assoc., Clark Bldg., sewage disposal plant. $150,000.

Tex., Baytown—City, defeated bonds, sewage disposal plant, $130,000; sanitary sewers, $350,000; storm sewers, $140,000. George M. Hillyer, city engr. CD 11/5.

Tex., Dallas—City, City Hall, Main and Harwood Sts., exten. West Bank trunk sanitary sewer line 5,500 ft. long from Hampton to Westmoreland, $168,000. Forest & Cotton, Praetorian Bldg., consult. engrs. CD 11/21.

Tex., Dallas—Dallas Housing Auth., 2525 Lucas Dr., exten. West Bank Sanitary Sewer Line from N. Beckley and Oregon Sts. to Hampton Rd. near Singleton. $700,000. Forest & Cotton, Praetorian Bldg., consult. engrs.

Tex., Houston—SHOPPING CENTER—S. N. Adams & Co., 4001 Westheimer St., addnl. unit of shopping center, Highland Park Shopping Village, $300,000.

STREETS AND ROADS

La., Crowley—City, pave 70 streets, $165,000. Barnard & Burk, Triad Bldg., Baton Rouge, consult. engrs.

▲ Mich., Flint—Bd. Supervs. Genesee Co., Flint, road work, incl. paving, repairing roads, $2,342,000. J. T. Sharpensteen, Flint, county road engr. CD 11/16.

Nebraska—State Dpt. Roads & Irrigation, Lincoln.

Lincoln—imprvs. 28 mi. city streets as part of Urban Federal and State Hy. System. $250,000. H. L. Aitken, Lincoln, state engr.

N. Y., Babylon—Town, 25.9 mi. roads. $221,550.

▲ N. Y., Brookhaven—Town, 191.4 mi. rds. $1,427,050.

N. Y., East Hampton—Town, 41.2 mi. roads. $311,900.

N. Y., Franklin—Town, 25.5 mi. roads. $214,500. CD 9/12.

N. Y., Gardiner—Town, 17.7 mi. roads. $123,900.

N. Y., Hardenbergh—Town, 19.7 mi. roads. $137,900.

N. Y., Harrietstown—Town, 13.79 mi. roads. $110,320.

N. Y., Huntington—Town, 65.4 mi. roads. $475,000.

(Continued on page 97)

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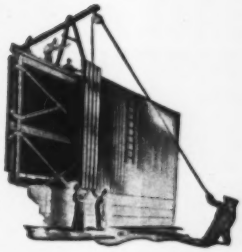

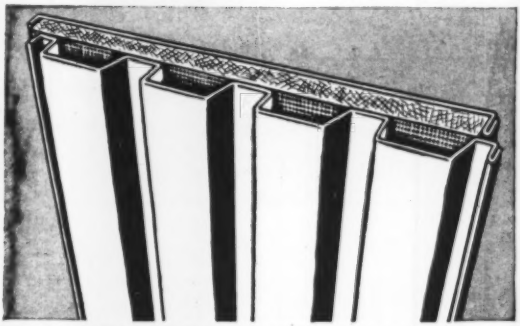

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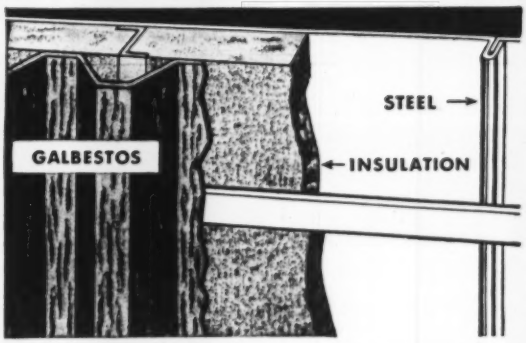
Factory-assembled Q-Panels go up quick—50 sq. ft. in nine minutes. Only a small crew is needed to attach panel to frame. Perfect for powerhouses, administration, research and laboratory buildings. The distinctive fluted surface provides an interesting wall texture.

WEIGHT	SIZE	INSULATION	FINISHES*
In Steel—6 lbs./sq. ft.	2' wide; lengths up to 25' depending on material used.	Complete panel is 3¼" thick with insulation value superior to a 12" masonry wall with furred plaster. U-factor—.14 in aluminum; .18 in steel.	Steel, aluminum, stainless, Galbestos metal**. *Depending on availability.



ROBERTSON Q-PANELS

(G-TYPE)

Factory-engineered for quick field assembly, G-Type Q-Panels provide commercial and industrial buildings with good-looking, maintenance-free walls. G-Type Q-Panels are insulated, lightweight and capable of long spans to reduce the over-all weight of your building. They have the advantage of Top-Speed Fastening, a Robertson method by which greater areas of walls can be installed per crew. All work is done from the outside, eliminating interior scaffolding.

WEIGHT	SIZE	INSULATION	EXTERIOR
7 lbs./sq. ft.	12' long, width determined by size of Galbestos sheet.	U-factor—.16	Galbestos metal**

**THIS IS GALBESTOS METAL

Steel sheet with asbestos felt metallically bonded to it. The felt is then impregnated with asphalt and waterproofed. The bond is inseparable, to all purposes forming a new kind of material. Maroon, black or aluminum color; fabricated in a variety of shapes.

Write for Free Catalogs

1. Q-Panel (Standard)
2. Q-Panel (G-Type)

H. H. ROBERTSON CO.

2420 Farmers Bank Building
Pittsburgh 22, Pa.

Offices in All Principal Cities in the U. S. A. and Canada

World-Wide Building Service

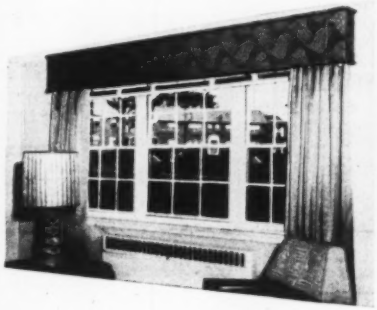
TRUSCON... a name you can build on

One of the largest community apartment projects...

14,000 Truscon Series 138 Double-Hung Steel Windows
3,000 Truscon Basement Steel Windows
500 Truscon Residential Steel Casements
in the Philadelphia Lynnewood Gardens Apartments!

129 buildings over 126 acres... 1798 separate apartments . . . cost approximately $20,000,000 ... these are the tremendous figures in the record-breaking F.H.A. Lynnewood Gardens Apartments job just completed!

Philadelphia builders Monty H. Tyson, A. P. Orleans, and A. H. Weiss chose Truscon Steel Windows for this great project because of their proved *beauty with economy*. When all the installation savings are figured, Truscon Steel Windows are attractive in *first cost*. And they are *increasingly economical* as each year passes without the constant problem of maintenance, adjustment and repair.



In addition to this outstanding Philadelphia project, Truscon Series 138 Double-Hung Steel Windows have been used on more than 500 large residential projects in all parts of the country.

See SWEET's for complete details on the entire line of Truscon Steel Windows for every purpose; and write for detailed literature on the entire line of Truscon Steel Building Products.

TRUSCON
MARK OF MERIT
PRODUCTS

TRUSCON® STEEL COMPANY
YOUNGSTOWN 1, OHIO
Subsidiary of Republic Steel Corporation

Continued from page 94

N. Y., Islip—Town, 88.1 mi. roads. $674,600.
N. Y., Lloyd—Town, 32.8 mi. roads. $261,400.
N. Y., Malone—Town, 33 mi. roads. $232,600.
N. Y., Riverhead—Town, 58.1 mi. roads. $452,000. CD 11/9/44.
N. Y., Shelter Island—Town, 21.8 mi. roads. $153,700.
N. Y., Smithtown—Town, 66.5 mi. roads. $525,200.
N. Y., Southampton—Town, 105.3 mi. roads. $762,200.
N. Y., Southold—Town, 31.9 mi. roads. $228,200.
N. Y., Waverly—Town, 12.4 mi. roads. $102,250.
N. Y., Wawarsing—Town, 49.55 mi. roads. $346,850.
N. Y., Westville—Town, 14.6 mi. roads. $102,200.
Tex., Baytown—City, defeated bonds, street imprvs. $500,000. George M. Hillyer, city engr. CD 11/5.
Tex., Hallettsville—Lavaca Co., Hallettsville, farm to market roads, 3 mi. from end F.M. 530 near Sparks northward to Jackson county line, $65,000; 3.4 mi. from F.M. 532 at Moulton northward to Gonzales Co. line, $68,000; 2.4 mi. from State Hy. 200 northward through Weid, $60,000.
Wash., Seattle—City, County-City Bldg., Zone 4, paving alley in Blocks 3 and 4, Central Park addn. to West Seattle, et al, $268,086. R. W. Finke, city engr.

EARTHWORK, WATERWAYS

▲ **Montana and Wyoming**—Big Horn Irrigation & Power Co., Hardin, Mont., dam and power plant on Big Horn River, Big Horn, Carbon and Yellowstone Counties, Mont. and Big Horn Co., Wyo.
▲ **Pennsylvania**—General State Auth., 18 and Herr Sts., Harrisburg, flood control dam and reservoir on First Fork of Sinnemahoning Creek, a tributary of the West Branch of Susquehanna River, Clinton Co. $10,000,000. Gannett, Fleming, Corddry & Carpenter, 600 N. 2nd St., Harrisburg, consult. engrs. A. F. Jones, c/o owner, ch. engr. CD 1/18.

AIRPORTS

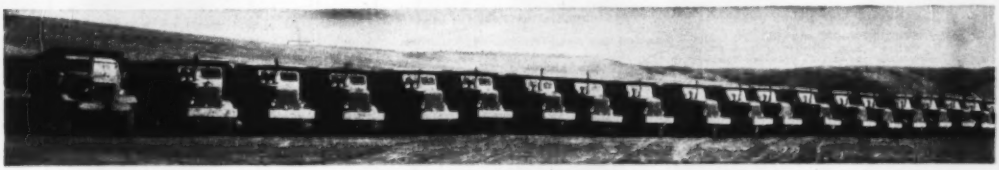
▲† **Colo., Denver**—QUARTERS, etc.—U. S. Eng., Govt. Commander, Lowry Air Force Base, B.O.Q. Bldgs., Denver, Colo., plans by Cerf S. Ross Assocs., Auditorium Circle, San Antonio, Tex., B.O.Q. Bldgs. remodeling and expanding, Lowry Air Force Base, Halsey & Royer, 217 Transit Tower, San Antonio, Tex., consult. engrs. CD 11/21.
▲† **Colo., Denver**—OPERATION, etc.—U. S. Eng., 1709 Jackson St., Omaha, Neb., operation and training bldgs. $4,000,000; utilities extension, imprvs. $2,000,000; fuel storage, $100,000., Lowry Air Force Base. CD 9/11.
▲† **Fla., Key West**—AIR STATION—Dist. P. Wks. Office, Box 365, Naval Base, S. C., plans by Robert Law Weed & Assocs., Dupont Bldg., Miami, various items of construction at Naval Air Station, Total $3,867,000.
▲† **Neb., Fort Crook**—BARRACKS, etc.—U. S. Eng., 1709 Jackson St., Omaha, barracks, BOQ and mess hall at Offutt Air Force Base. $1,000,000.
▲† **Minn., Minneapolis**—WAREHOUSE, etc.—U. S. Eng., 1709 Jackson St., Omaha, Neb., warehouse, shops and misc. buildings, $400,000; barracks and mess buildings, $350,000; readiness building, $100,000; extens., imprvs. to utilities, $150,000, at Wold-Chamberlain Air force Base. CD 11/15.
† **Mont., Great Falls**—BASE OPERATION BLDG.—U. S. Eng., City-County Airport, Walla Walla, Wash., plans by G. H. Shanley, First National Bank Bldg., base operations bldg., Great Falls Air Force Base, $111,000. CD 11/5.
▲ **Pa., Pittsburgh**—AIRPORT—Bd. Comrs., Allegheny Co., County Office bldg., 2 one story, 140x270 ft. steel concrete hangers, Greater Pittsburgh Airport. $2,500,000.
▲† **Tex., Beeville**—RUNWAY—Eighth Naval Dist., Federal Bldg., New Orleans, 12, La., addnl. air facilities, Naval Auxiliary Air Station, Chase Field. Forrest & Cotton, Praetorian Bldg., Dallas, consult. engrs. CD 10/22.
Tex., Fort Worth—AIRPORT PAVING, etc.—City, City Hall, terminal apron paving, lighting sys., access roads, storm sewers, Midway International Airport, $789,867. Carter & Burgess, Century Bldg., consult. engrs. CD 9/17.

LATIN AMERICA

▲ **Mexico**—Federal Electric Comn., c/o Dpt. Gov. P. Wks., Mexico City, Mexico, plans electric power plants, at Sonora, $1,500,000; Actopan, $375,000; Ciudad Victoria, $250,000.
▲ **Mexico**—Public Wks. Council, Junta de Majoras, Matamoras, plans 500,000 sq. yd. Washington Beach resort development, amusements, playgrounds, swimming pools, etc. $1,750,000; yacht basin, $250,000.
▲ **Mexico, Alto Hornos**—Mexican Fed. Govt., c/o Dpt. P. Wks., Mexico City, plans expansion steel works. $7,500,000.
Mexico, Col. Guadalupe Tepeyac-Jesus Diaz Juarez Amalie, 113, plans steam ironing factory. $300,000.
Mexico, Guadalajara—Hilados y Tejidos de Latex, S. A. Cruz Verde, 524, plans latex products factory. $350,000.
▲ **Mexico,** Macuspana, Tabasco-Petroleos Mexicanos, Mexico City, plans refinery. $6,000,000.
▲ **Mexico, Matamoros**—Pub. Wks. Council, Junta de Najoras, Matamoros, Plan 1, luxury hotel at Washington Beach on Rio Grande River, $750,000; Plan 2, luxury beach on Washington Beach on Rio Grande River, $1,250,000; club and bathhouse, $350,000.
▲ **Mexico, Mexicali Valley**—Sria. de Recursos Hidraulicos (Hydraulic Resources Ministry) P. de la Reforma, 69, Mexico City, plans irrigation works in 1952. $8,090,000. Adolfo Orive, Alba, c/o owner, engr.
Mexico, Mexico City—Armando Fernando Gonzalez, Villa Hermosa, 25-9, plans ornamental porcelain factory. $250,000.
Mexico, Mexico City—Bobinadores Unidos Ribera de San Cosme, 138, plans electric transformers factory. $250,000.
Mexico, Mexico City—Dyna, S. A., Juarez 104-2, plans sewing machine factory. $250,000.
Mexico, Mexico City—Harinas de Maiz, S. A. Ramon Guzman, 114, plans corn products factory. $250,000.
Mexico, Mexico City—Jesus Cardenas Gonzalez Madero, 55-101-02, plans lacteous solids rehydration plant. $300,000.
Mexico, Mexico City—Productos Electronicos, Galeana, 200, plans radio parts factory. $250,000.
Mexico, Mexico City—Tablajeros Unidos de Mexico (United Butchers of Mexico) Raul Chavez Rico, sec., Valle, 19 V-C, Mexico City, plans meat packinghouse. $1,150,000.
Mexcio, Mexico City—Vidrioflex, S. A. Gante, 11-401-03 Mexico City, plans flexible glass factory. $400,000.
▲ **Mexico, Monterrey**—Cia. Aceros de Monterrey (Agustin Rodriquez) direction conocido, Monterrey, N. L. plans steel foundry. $1,380,000.
Mexico, Santa Maria Insurgentes—Bujias de Mexico, S. A. Calle 56, Norte, 55, plans cases for motors factory. $250,000.
Mexico, Tacubaya—Industrias Pardo, Observatorio, 125, plans oil gas regulators, valves, etc. factory. $400,000.

PUBLIC BUILDINGS

▲† **Ala., Huntsville**—HOUSING, etc.—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, housing, training facilities research and development, facilities, supporting facilities, and utilities at Redstone Arsenal, $15,584,000. Parsons-Aerojet Co., 411 W 5 St., Los Angeles, Calif., will design test facilities, consult. engrs.
▲ **Ark., Hope**—ELECTRIC PLANT—City, electric plant $3,000,000. Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., consult engr.
Calif., Boulder Creek—SCHOOL—San Lorenzo Valley Unified School Dist., P. O. Box 8061, Boulder Creek high school, $650,000.



Euclid end dump trucks working on Randall Dam. KIM Hotstarts have been installed on these trucks, as well as on 25 Euclid bottom dump wagons, 5 gasoline welders and 5 Allis-Chalmers tractors.

Instant Starts at Randall Dam *with* KIM Hotstart

REG. U. S. PAT. OFF.

Winter temperatures in South Dakota do not encourage quick or easy starting of motorized equipment. So, Western Contracting Corporation, contractors on the Randall Dam job, installed KIM Hotstarts on their equipment. Here are the results:

No warm-up time • Quick, easy starts
Reduced wear and damage to engines

KIM Hotstart electric pre-heater on each gas or diesel engine is plugged into electric circuit when equipment is not in use. This draws off cold water, heats it, forces it back into the engine at another point, keeping engine warm and ready for instant starting. Battery life is lengthened; heated terminals or garages are not needed. Models to fit all trucks, tractors, automobiles, stationary engines. For installation see your International Harvester or Mack Truck dealer or other automotive suppliers; or mail the coupon for detailed information.

KIM Hotstart Manufacturing Co.
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Please send literature, prices and name of local dealer.

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Address_____
City_____ Zone____ State_____
Make and model of equipment_____

▲ Conn., Voluntown—HOSPITAL—State & Wm. Sts. State Office Bldg., Hartford, hospital addn. Fair field state hospital $5,000,000. CD 5/1/51

▲ Fla., Orlando—HOUSING—Orlando Housing Auth., Orlando, FH housing units. $5,000,000.

Fla., Sanford—HOUSING—Sanford Housing Auth., Sanford, FH housing units. $750,000.

▲ Ga., Atlanta—HOUSING—Atlanta Housing Auth., Atlanta, Ga., plans to Atomic & Allotment of Atlanta, G.A.M. 1950 housing units. Stewart Ave. C.M. $5,000,000.

Ill., Glen Ellyn—SCHOOL—Township High School Dist. 87, 421 Crescent Blvd., plans by Clarence A. Jensen & Associates, 20 S. Wacker Dr., 2 story junior high school addn. $900,000.

▲ Ia., Sioux City—COURT HOUSE—Court St. & W. 5th Sts., 300 seat exclusive jail, 23 court house. $2,500,000. CD 12/1/51

▲ Ia., Des Moines—SCHOOLS—Dist. 1, 429 E. 5th St., Des Moines Board High School, $3,395,000, administration bldg., $1,000,000; plans by Eugene Weidenhammer, 1000 Insurance Exchange Bldg., East High School addn., $900,000; Durham Avenue Junior High School, $285,000; Callanan Junior High addn., $362,000. CD 2/1/52

▲ Ia., Sioux City—HOUSING—Sioux City Housing Auth., 515 Congress St., plans to John Sukup & Associates, Commercial St., East Dubuque, 177 housing units, Jennings and Morris Sts., Des Moines, 2 CD $1,250,000

▲ Ia., Waterloo—HOUSING—Waterloo Housing Auth., 1st & Mulberry St., plans by Merrick & Coombs, 56 Central Ave., Dubuque, housing units, Prairie Rd., Kenyon Ave. Addition and Anderson Sts., $2,288,000; plans by Kamerick-Hanson & Pratt, 418 Brown St., 1,000 housing units, Phase III-A, $1,500,000. CD 4/25/51

▲ Ia., Waterloo—SCHOOL—City School Dist., 42 East St., plans by Perkins & Will, 309 W. Jackson Blvd., Chicago, 11, junior high school, $2,125,000.

▲ Mich., Benton Harbor—SCHOOLS—City, 86 Elm St., plans by Warren S. Holmes Co., 2450 Fifth Ave., Detroit, 1, 2 story addn. $2,200,000.

Mich., Berrien Springs—SCHOOL—Twp. Bd. of Ed., 2 story school addn. (classrooms) school, $900,000.

Mich., Saginaw—HOSPITAL—St. Eugene, Saginaw St., South, house medical personnel, including hospital, nursing, laundry, Roy McDonald and Theirle Coulter, $900,000.

▲ Mo., Kansas City—HOSPITAL—Kansas City Menninger Foundation, c/o Arthur May, pres., City Hall, plans by Architect Edward Stotler & Associates, Rockhill Road Bldg., Kansas City, 6, Mo., 80-bed neuropsychiatric hospital, clinic, treatment rooms, administration, storage space, $1,000,000.

▲ N. C., Henderson—SCHOOLS—66 Comm. Vance Co., c/o J. B. Hearn, atty., Henderson, bond election Jan. 8, schools $2,335,000.

N. C., Henderson—COURT HOUSE, etc.—66 Comm. Vance Co., J. B. Hearn, atty., Henderson, bond election Jan. 8, court house and jail enlargement, $630,000. CD 9/28

O., Columbus—CANCER RESEARCH—Ohio State University, N. High St., 5 story (ultimately 12 story) Starks M. Calvin research bldg., $657,000. CD 6/25/45

▲ Pa., Lettershenz—ADMINISTRATION, etc.—Dept. Army, 25 St. and Maryland Ave., Baltimore, Md., plans by Modjeski & Masters, State St. Bldg., Harrisburg, and Harris Sackett & Assoc., 123 S. Broad St., Philadelphia, 2, administration bldg. addn., $504,000; generic supply warehouse, $2,016,000; 105 refrigerated storage magazines, $1,350,000. CD 12/27/51

▲ Pa., Phila.—HOUSING—Phila. Bd. Ed., 21 and Winter Sts., plans by George M. Ewing, Atlantic Saving Fund Bldg., Juniper and Chestnut Sts. $3,250,000. CD 2/8/45

▲ Pa., Phila.—RESIDENCES, etc.—National Park Service, Dept. Interior, 425 Chestnut St., residences, museums, and offices, old area of Independence Hall Mall, $8,000,000; comfort station, $60,000. M. D. Anderson, dist. supt.

▲ S. C., Charleston—APARTMENTS—Porter Military Academy, 167 Ashley St., plans by Hussey & Gunnings, 4 Read St., one 7 story apartment and two 3 story apartments. $1,500,000.

Tenn., Nashville—SCHOOL—Preston & Sladden Vocational School, Inc., 11 and Charlotte Sts., plans by McKissick & McKissick, Morris Bldg., vocational school bldg. $600,000.

▲ Tex., Fort Worth—HOUSING—Pub. Housing Auth., City Hall, plans by P. M. Green, 905 N. P. Anderson Bldg., C. B. Constantine, Century Bldg., and Wilson & Patterson, 202 Burnett Bldg., 400 housing units, $2,225,000. Carter & Burgess, Century Bldg., consult. engrs. CD 9/15/49.

Tex., Buda—HOSPITAL—Board for Texas State Hospitals & Schools, 35 and Lamar Sts., Austin, plans by Shirley Simons & Sons, 1723 S. Broadway, Tyler, receiving and treatment bldg. at Buda State Hospital, $307,000.

▲ Alta., Edmonton—HIGH SCHOOL—Bd. Educ., H. G. Turner, sec., Edmonton, plans by Rule, Wynn & Rule, 11422 Jasper Ave., 2 story, 450 ft. long width varying from 66 to 160 ft., rein.-con., brick Eastglen High School swimming pool, $1,750,000. CD 11/24/50

▲ Ont., Toronto—HOUSING—York Twp., 2700 Eglinton Ave. W., housing development, Keele St. $1,200,000.

▲ Ont., Toronto—LIBRARY—University of Toronto, Simcoe Hall, Toronto, plans by Mathers & Haldenby, 15 St. Mary St., Medical research bldg. adjacent to 100 College St. $1,500,000. Bids 9/5 rejected. Col. A. D. Lepan, supt., c/o owner. CD 11/19

Int., Wetland—HIGH SCHOOL—Lincoln & Wetland High School Bd. c/o Allentown High School, Allentown, 8-room high school, Church Rd. and Geneva St. $750,000. CD 12/29/45

COMMERCIAL BUILDINGS

▲ Calif., Anaheim—GAME BIRDS—Anaheim Highland Builders, 101 Commercial Center Dr., Beverly Hills, plans by W. W. Gray, 5671 Wilshire Blvd., Los Angeles, 250 frame, stucco dwellings, $1,000,000.

Calif., Hawthorne—HOSPITAL—Hawthorne Community Hospital, Grevelia St., plans by Wm. Burrell Bolf of America Bldg., Glendale, 2 story, mid-century addn. $650,000. CD 5-30-50, under Public Buildings.

▲ Minn., Glencoe Falls—HOUSING—Westover Development Corp., 10 A Exchange St., Portland, Me., plans by Paul E. Atwood, 10 Court St., Bangor, Me., housing addn. $2,000,000.

▲ Minn., St. Paul—OFFICE—Minnesota Mutual Life Insurance Co., Jay E. A. St., office, Cedar St. between Fourth and Fifth Sts. $10,000,000. CD 9/15/50

Mo., Independence—CHURCH—Reorganized Latter Day Saints Church, 1216 E. 36 St., Kansas City, Mo., plans by Henry C. Smith, 215 S. Pleasant St., Independence, and J. Wursky & Mr. McPherson Sr., St. Louis and Kansas City & Fremont Railway Exchange Bldg., Kansas City 6, Mo., limestone facade church, incl. main auditorium. $600,000.

▲ N. J., Trenton—HOSPITAL—Owner c/o Dr. Louis Kinder, current hospital, Spruce Ave. and Lin St., New York, N. Y. Plans by Louis Kaplan, 25 N. Montgomery Ave., 200-bed unit hospital, Parkway Ave., Ewing Twp., $3,000,000.

▲ N. C., Charlotte—HOSPITAL—Charlotte Memorial Hospital, 1496 Scott Ave., hospital addn. $840,000.

▲ N. C., Lexington—Y. M. C. A. BLDG.—Young Mens Christian Assn., George L. Cable, pres., Lexington, Y. M. C. A. bldg. $500,000.

▲ O., Cleveland—HOTEL—Robert P. Joyce & Associates, hotel redevelop. Superior Ave., N. E. and E. 6 St., modernize, incl. new room layout, incl. garage elevator, air-conditioning, ground floor store remodeling, room remodelization, etc. $1,250,000.

▲ O., Columbus—SHOPPING CENTER—Don M. Casto Co., and Don M. Casto, jr., 145 N. High St., plans by C. Melvin Frank, 43 N. Long St., Northern Lights Shopping Center, Cleveland and Cleveland Aves. $10,000,000.

Pa., Cynwyd—RESIDENCES—Contract & Foundation Corp., 1775 S. Schuyler Ave., Phila., residential development, enclose Rd. Approx. $700,000.

▲ Pa., Spartanburg—RESIDENCES—Louis Mancinelli, 653 E. Bell St., Phila., residential development, Street and Brownsville Rds. $2,900,000.

Tex., Galveston—SCHOOL, etc.—Galveston Catholic Diocese, Most Rev. W. J. Byrd, Bishop, 2021 Church St., school and church, Stella Link Rd. $550,000.

▲ Tex., Houston—DWELLINGS—The Marvin Henry Builders, 3106 Randall St., plans by Willard & Hood, 3940 Main St., 50 masonry, frame dwellings, central heating, in northeast sect. of city. $525,000.

▲ Tex., Temple—HOSPITAL, etc.—Scott & White Memorial Hospital, Temple, plans by Wyatt C. Hedrick, engr. and architect, 1604 Fort Worth Ave., Dallas, 150 bed unit hospital, $500,000; doctors home and in terns dormitory, $400,000; scientific museum, $350,000; nurses home or dormitory, $350,000; school of nursing, $300,000; educational bldg., $300,000; power house, $250,000; animal or chemical research, $450,000; warehouse and storage, $90,000. CD 12/27/47

Utah, Provo—FAMILY LIFE—Brigham Young University, Provo, plans by Fred L. Markham, 45 N. University St., 2 story Family Life Bldg. $600,000.

B. C., Vancouver—HOSPITAL—Sisters of Charity of Immaculate Conception St. John, N. B. plans by Gardiner & Thornton, 1644 W. Broadway Ave., 5 story, 44x182 ft., St. Vincent's Hospital extens., 2 story auditorium and chapel addn., existing bldg. alterations. $750,000.

Ont., Sault Ste. Marie—HOSPITAL WING—Order of the Grey Nuns, Sister Mary Augustine, mother superior, Sault Ste. Marie, 85-bed hospital wing, 941 Queen St. E. $800,000.

INDUSTRIAL BUILDINGS

Calif., San Jose—PLANT—Moore Industrial Co., Box 658, Los Gatos, plans by Gifford E. Sobey & W. Newton Green, 125 W. Main St., Los Gatos, plant and office, N. 7 and Commercial Sts. $800,000.

▲ Del., Cheswold—PLANT—International Latex Corp., Dover, Del., first unit textile mfg. plant. Approx. $1,000,000. Fred Andrews, ch. engr.

Ga., Atlanta—BUS TERMINAL—Crescent Stages, Inc., Modern Coach Corp. & Smoky Mountain Stages, Bus Terminal, Cain St. N.E., bus terminal, $450,000.

▲ Ind., Indianapolis—PLANT—Allison Div., General Motors Co., General Motors Bldg., Detroit, Mich. experimental plant, Tibbs Ave. $5,000,000.

Ind., Indianapolis—WAREHOUSE, etc.—General Electric Supply Co., 126 W. Georgia St., warehouse and headquarters, Kentucky Ave. and Belt Railroad. $500,000.

▲ La., Cedar Rapids—FOUNDRY—, E. W. Company, Architect East, electric steel foundry, $5000,000.

▲ Ky., Louisville—PLANT—Louisville Chemical Co., 1000 Commodore Ave., New York, N. Y., plant for production of sulfur monochloride in ammonia, 25th acre, south of Hunnersdown between Ohio River and Camp Ground Rd. in Brunner Lane. $2,500,000.

▲ La., New Orleans—REFINERY—Shell Oil Co., Pictures Bldg., New Orleans, catalytic refinery cracking unit for making motor gasoline, $22,000,000; alkylation unit, $7,000,000; motor gasoline storage tanks to existing tank farm, $2500,000; some modernization of existing refinery, $1,250,000; products lines, $1,50,000; lathering crude lines, $2500,000; general site earthwork, grading, filling, drainage, $80,000; water supply construction, $40,000; large water cooling tower, $1,40,000. Bids in to mid of June.

▲ Wash., West Germantown—PLANT—Shea Chemical Co., West Germantown, chemical plant, $2,500,000 incl. equip.

Wis., St. Louis—ROUNDHOUSE and SHOPS—Wisconsin-Pacific R. R. Co., W. H. Timms, ch. engr., Wisconsin-Pacific Bldg., and Union Pacific R. R. Co., Omaha, Neb., removal of roundhouse at Chisholm and Fairing Aves., erecting shed 55 ft. diesel engine shops, install addl. 900 gal. oil tanks. $5,39,000.

▲ S. C., Abbeville—PLANT—Owens-Ill. Tire & Arms Corp., Line Mgr., plans by Six Associates, Inc., 1103 Hendersonville Rd., plant. Approx. $2,000,000.

▲ S. C., North Augusta—GENERATING PLANT—South Carolina Electric & Gas Co., 1426 Main St., Columbia, electric generating plant, $45,000,000.

▲ Tex., Houston—WAREHOUSE, etc.—Southern Pacific Lines, in Texas and Louisiana, A. Loggins, Southern Pacific Bldg., Houston, engr. general warehousing, $2,000,000; new freight yard, $4,000,000.

▲ Wash., Seattle—WAREHOUSE—Pier Richmond Industrial Corp., 1 Drumm St., San Francisco, Calif., plans by Ward & Bolles, 369 Pine St., San Francisco, Calif., warehouse for storage, $1,000,000. CD 8/1/51

▲ Wash., Seattle—TERMINAL—Seattle Transit System, Airport Way and Atlantic St., terminal to replace Jefferson St. Terminal, $1,250,000.

▲ B. C., Vancouver—CATALYTIC CRACKING UNIT—Imperial Oil Ltd., 234 Smith St., catalytic cracking unit at Moss plant at head of Burrard Inlet, $24,000,000.

▲ Sask., Prince Albert—DISTILLERY—Northwest Distillers Co., Sheriff's Office, Prince Albert, distillery, 1½ mi. north of here. $1,000,000.

UNCLASSIFIED

Arizona—RURAL DISTRIBUTION LINES—Verde Electric Cooperative, Cottonwood, 58 mi. rural distr. line and sys. improv., Yavapai Co. $210,000.

Ia., Keokuk—SWIMMING POOL—City, Clarita Langston, clk., defeated $185,000 bonds, municipal swimming pool. CD 10/12/51

Mass., Swansea—ROLLER SKATING RINK—Santoro Bros., 250 Dean St., Norwood, 110x210 ft., brick, concrete, cement block indoor roller skating rink, $125,000.

Mich., Detroit—SIRENS—City, Office of Civil Defense, installing 50 large air raid warning sirens, 25 smaller sirens, $300,000. George R. Thompson, Guardian Bldg., city engr.

▲ Missouri-Kansas-Oklahoma—REPLACEMENT RAILS—Missouri Pacific R. R. Co., W. M. Hobbs, ch. engr., Missouri Pacific Bldg., 3rd and Olive Sts., St. Louis, Zone 3, replacing approx. 302 mi. present rails with new and heavier steel, involving 64,285 tons at various points in sys. $8,684,946.

Missouri—RURAL DISTRIBUTION LINES—Three Rivers Electric Co-operative, Linn, 81 mi. rural distr. lines, 25 mi. new tie lines, headquarters facilities, Osage Co. $535,000. Frank Horton & Co., Lamar, consult. engrs. CD 11/21.

N. J., Trenton—PARKING LOT—Charles N. Schragger, Inc., 222 E. Hanover St., plans by Louis S. Kaplan, 25 N. Montgomery St., rooftop parking lot. $350,000. CD 9/16/49.

New Mexico—RURAL DISTRIBUTION LINES—Kit Carson Electric Co-operative, Taos, 71 mi. rural distr. lines, 58 mi. tie lines and communication facilities, Taos Co. $395,000. REA allot. Tyrrel & Loftin, Korber Bldg., Albuquerque, N. M., consult. engrs. CD 12/26/46.

▲ Texas—OIL PIPE LINE—Pan-American Pipe Line Co., M. Esperson Bldg., Houston, 27 mi. 26 in. welded joint crude oil pipe line, Genoa to Texas City, $1,200,000; 40 mi. 14 in. crude oil line Arden Station in Irion Co. to Eldorado Station, Schleicher Co. $800,000.

Texas—GAS PIPE LINE—Phillips Petroleum Co., Bartlesville, Okla., gas pipe line from Benedum field to area of refinery near McCamey, $200,000.

Texas—OIL PIPE LINE—Service Pipe Line Co., Carlsbad, N. M., 15 mi. 6 in. screw-joint crude oil pipe line from Haskell area to connection main trunk line, $100,000; 15 mi. 6 in. screw joint crude oil line out of Knox city area to connection main trunk line, Knox City, Knox Co., $110,000.

Tex., Dallas—PARKING STATION—City, City Hall, Main and Harwood Sts., parking station, 13-acre tract near Union Terminal Station. $200,000. J. G. Rollins, Pub. Wks. Engr.

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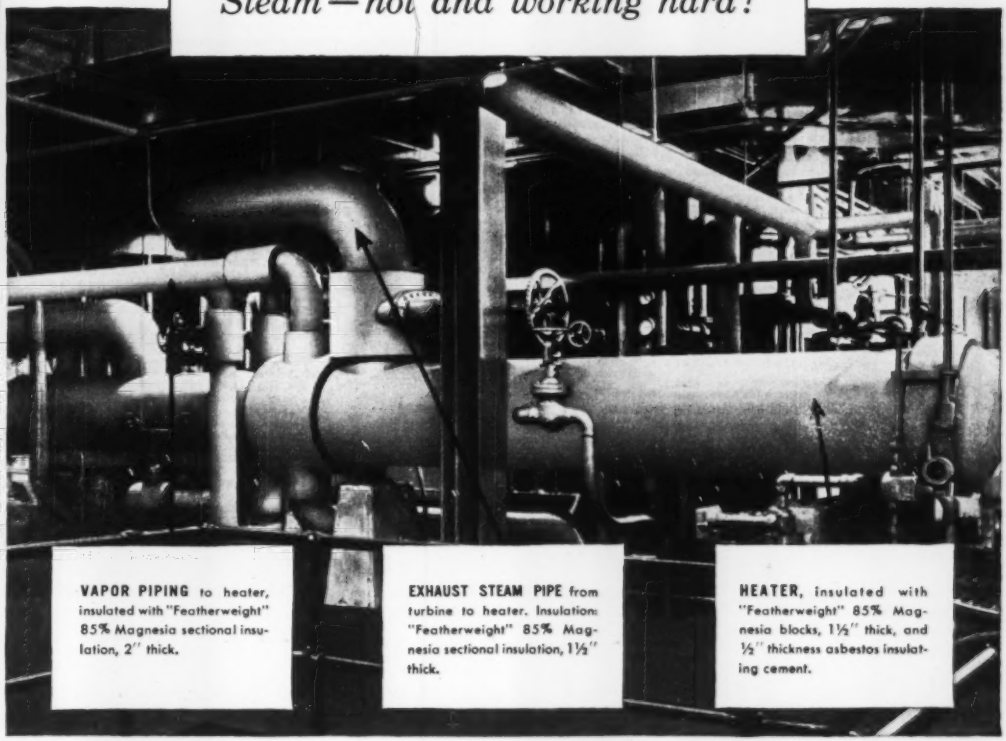

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CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

December 18, Massachusetts

BIDS ASKED—BUILDINGS

▲ Mass., Chelsea — HOUSING — B.A. 1/3 — Chelsea Housing Auth., City Hall, housing, Proj. PHA 16-2, Clinton St. and Crescent Ave. $1,250,000. Plans deposit $50. Kelley & Gruzen, 73 Tremont St., Boston, archts. CD 4/26/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

C. DeMartino & Son, Inc., Clare Ave., Hyde Park, Mass. CA $107,690. Contr. 3, laying water mains, BLACKSTONE, MASS. Town, Bd. Water Comn., Town Hall, Blackstone, Mass. Awarded Dec. 3. CD 9/11, under LB.

P. B. O'Neil & Co., 22 Preston St., Hartford, Conn., LB, $222,690, Contr. A, portion of Southern Intercepting sewerage system from flood dike southerly passing under Hockanum River and Charter Oak Bridge, East Hartford, HARTFORD, CONN. Bd. Contract & Supply, 115 Broad St., Hartford, Conn. Bids Nov. 29.

BUILDINGS

LOW BIDS AND CONTRACTS

S. & D. Construction Co. of Agawam, Inc., 448 Main St., Agawam, Mass. Owner Builds. $313,000. four 1 story RESIDENCES, SPRINGFIELD, MASS.

United Engineers & Constructors, Inc., engr., 1401 Arch St., Phila., CA. Approx. $500,000 design and construct electric GENERATING PLANT addns., alterations, PROVIDENCE, R. I. for Narragansett Electric Co., 51 Westminster St., Providence, R. I.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

December 18, Maryland

STREETS AND ROADS

December 18, Maryland December 20, Pennsylvania

BIDS ASKED—BUILDINGS

Pa., Phila. — HOSPITAL — B.A. 12/18 — Northeastern Hospital, Allegheny Ave. and Tulip St., hospital addn. $850,000. Extended date. Ballinger Co., 121 N. Broad St., archt. CD 11/28.

Pa., Harrisburg—DETENTION HOME—B.A. 12/19—Comrs. Dauphin Co., Court House, 2 story, 2-wing addn. to Dauphin County Juvenile Detention Home, $300,000. Plans deposit $50. Lawrin & Green, 321 N. Front St., Harrisburg, archts. CD 4/8/48.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany.

A. S. Wikstrom, Inc., Box 217, Skaneateles, N. Y. CA. $1,642,287. 4.15 mi. New York State Thruway across Montezuma Swamp, Seneca and Cayuga Counties. Bids Oct. 24. 10/29, under LB.

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany.

John C. Peterson Constr. Corp., 950 Church St., Baldwin, N. Y., LB $792,723, est. $917,000. 0.63 mi. Bronx River Parkway (southern exten.) E. 233 St. to city line. Cont. FA BRP. 51-3, Bronx and Westchester Counties;

Lizza & Sons, Inc., 21 Orchard St., Oyster Bay, N. Y. LB $131,319, est. $152,000. 0.87 mi. Syosset-Cold Spring Harbor and Pt. 2, S.H. 545 and 1652, Cont. FA RC. 51-80. Nassau and Suffolk Counties;

City Construction Co., 640 Jay St., Utica, N. Y., LB $115,613, est. $134,000. 2.09 mi. Stockholm Center-Lawrenceville, Pt. 2 (county road), Cont. FA-SS. 51-22. St. Lawrence Co.;

Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, N. Y. LB $523,223, est. $604,000. 12.51 mi. Broome County Line-Marathon S.H. 5595; Marathon-Cortland Pts. 1, 2, 3, and 4, SH 8012IB 8021A and 1500. Cont. FA RC. 51-81, Cortland Co.;

Potter-DeWitt Corp., Pavilion, N. Y., LB $671,013, est. $891,000. 3.07 mi. Lake Ontario State Parkway, Sect. "C" Cont. LOSP. 51-3, Monroe Co. Bids Dec. 4. CD 11/13.

Millman & Nazzaro, 215 Montague St., Brooklyn 2, N. Y. LB $214,745, Hunts Point Sewage Treatment Works Contr. 1-E. Throgs Neck intercepting sewers, Bronx Boro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Nov. 28. CD 11/5.

▲ **John Matricciani Co., Inc.**, 409 S. Caroline St., Baltimore, Md. LB $574,621. Contr. 378, Schedule A, 1,220 ft. 42- to 48-in. c.i. pipe, 600 ft. manholes 4,500 cu. yd. concrete, etc;

Columbia Constr. Co., 1301 Towson St., Baltimore 2, Md. LB $492,985. Schedule B, 1,430 lin. ft. 42 in. and 6,400 lin. ft. 48 in. reinf.-conc. pipe, 2,400 cu. yd. masonry, 600 lin. ft. manholes, BALTIMORE, MD. City, Bureau Sewers, 312 Municipal Bldg., Baltimore 2, Md. Bids Nov. 28. CD 11/21.

Chas. J. Spielman Co., Inc., 2901 Maisel St., Baltimore, Md. LB Sect. 1 $421,036. 23,700 ft. 6 and 8 in. vitr. clay and c.i. sewers, 360 ft. manholes, sewage pumping station; Sect. 2, LB $125,930, 17,080 ft. 6 and 8 in. vitr. clay pipe, 260 ft. manholes, NORTH BEACH, MD. Mayor & City Council, North Beach, Md. Bids Nov. 24. CD 11/1.

BUILDINGS

LOW BIDS AND CONTRACTS

Gerace & Castagna, Inc., 1711 Sheepshead Bay Rd., Brooklyn 29, N. Y. LB $739,594, OUT PATIENT bldg. at Cumberland Hospital, N. Elliott Pl., south of Park Ave., BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Nov. 28. CD 11/15.

▲ **Eileen Gardens Homes**, c/o Teas & Steinbrenner, archts. Homeland Blvd., Malverne, N. Y., Owner Builds. Approx. $5,000,000. 500 HOUSES on 100-acre tract, Old Country and Oyster Bay Rds., HICKSVILLE, N. Y.

▲ **William L. Blanchard Co.**, 45 Poinier St., Newark, N. J. LB $1,205,000. HOSPITAL addn., DOVER, N. J. Dover General Hospital, Jardine St., Dover, N. J. Bids Nov. 29. CD 11/13.

▲ **William L. Blanchard**, 45 Poinier St., Newark, N. J. CA $1,250,000. HOSPITAL and CLINIC addn., EAST ORANGE, N. J. East Orange General Hospital, Central and Munn Aves., East Orange, N. J. Vincent G. Kling, 917 Corinthian Ave., Phila., Pa., archt. CD 2/24/50.

▲ **United Engineers & Constructors, Inc.**, 1401 Arch St., Phila., Pa. CA $1,501,139. design and construct TURBINE and PUMP PLANT, PHILLIPSBURG, N. J. Ingersoll-Rand Co., Phillipsburg, N. J.

▲ **Rutledge Homes, Inc.**, 43 Rutledge Ave., Trenton, N. J. Separate Contracts. $1,300,000. RESIDENTIAL DEVELOPMENT Parkway Village, Sect. 3, TRENTON, N. J.

Edgewood Ave. Homes, c/o Louis H. Cahan, Market St National Bank Bldg., Phila., Pa. Separate Contracts. $500,000. RESIDENTIAL DEVELOPMENT, Edgewood Ave., etc., TRENTON, N. J.

▲ **Brookside Estates Homes**, c/o Rudolph Novack, archt., 713 Main Ave., Clifton, N. J. Owner Builds. $1,300,000. 100 HOUSES, Linden Ave. and Grove Rd., VERONA, N. J.

▲ **Cleveland Yerger & Son**, 1229 Bockius Ave., Abington, Pa. CA. $1,000,000. RESIDENTIAL DEVELOPMENT, Rydal sect. ABINGTON, PA. Isard Risen Co., 16 St. and Godfrey Ave., Phila., Pa.

▲ **Robert H. Whitehall, Inc.**, 53 S. Lansdowne Ave., Lansdowne, Pa., Separate Contracts. $3,000,000. RESIDENTIAL DEVELOPMENT, Trooper Rd., BETTSWOOD, PA.

Morris Cutler, 6333 N. Broad St., Phila., Pa., Separate Contracts. $500,000. RESIDENTIAL DEVELOPMENT, Tyson and Paper Rds., PHILA., PA.

Engel Glass Co., Bustleton and Philmont St., Phila., Pa. Separate Contracts. $500,000. RESIDENTIAL DEVELOPMENT, Maple Ave. and Farraday Ave., PHILA., PA.

▲† **Consolidated Constructors, Inc.**, 28 Cooper St., Woodbury, N. J., CA $4,670,045, four WAREHOUSES complete, incl. foundations, TOBYHANNA, PA. Dpt. Army, 128 N. Broad St., Phila., Pa. CD 10/31, under LB.

▲ **Davis Constr. Co.**, 320 W. 24 St., Baltimore, Md. CA $2,000,000. 310x456 ft., rein.-con., masonry TERMINAL WAREHOUSE, quick freezing, loading platform, driveway, 411x458 ft. plot, BALTIMORE, MD. Merchants Terminal Corp., Monument and Forest Sts., Baltimore, Md. Van Rennselaer P. Saxe, 100 W. Monument St., Baltimore, Md., engr.

▲ **Morrow Bros., Inc.**, 2315 N. Charles St., Baltimore, Md. LB $1,483,500. 2 story, brick, concrete block, steel 1,500,000 cu. ft. Hereford Junior and Senior High SCHOOL, Hereford, TOWSON, MD. Baltimore Co., Bd. Educ., Aigburth Rd., Towson, Md. Bids Nov. 29. CD 11/24.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

December 18, Virginia December 21, Kentucky

STREETS AND ROADS

December 18, North Carolina, Virginia

December 21, Kentucky

† Ala., Montgomery—FACILITIES—B.A. 12/20—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., imprvs., extens. to O. R. C. facilities Eng-01-016-52-37. Plans deposit $5.

Miss., Booneville — B.A. 12/21 — Prentiss Co. Bd. Supervs., Booneville, 5.912 mi. road imprvs. Plans deposit $5. T. O. Mabry Jr., Okolona, engr. CD 10/12/50.

BIDS ASKED—BUILDINGS

▲ Ga., Moultrie—HOUSING—B.A. 1/3—Moultrie Housing Auth., Moultrie, Projects GA 60-3 and GA 60-4 125 housing units. $1,000,000. Plans deposit $50. Albany Architects & Engineers, Albany, Ga., archts.

La., Oakdale—HOUSING—B.A. 1/15—Oakdale Housing Auth., 70 housing units. $685,000. CD 11/10/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† VIRGINIA—U. S. Eng., foot of Front St., Norfolk, **Ballenger Paving Co.**, Paris, Greenville, S. C., LB $255,502, relocating Secondary Highway, Inv. 52-14, Buggs Island Reservoir. CD 8/3/44.

† **Charles B. Stevens & Co.**, Morristown, Tenn., CA. $116,113, relocating Southern Ry., Inv. 52-12, Mecklenberg Co., VIRGINIA. U. S. Eng., foot of Front St., Norfolk, Va. Bids Nov. 20. CD 11/9.

Vanguard Constr. Co., Ingleside St., Norfolk, Va., LB $776,422, 37th Street water purification plant, NORFOLK, VA., City, Norfolk, Va. Bids Nov. 28. CD 11/23.

▲† **Nello L. Teer Co.**, P.O. Box 1131, Durham, N. C., CA. $2,796,181, Div. I, parking aprons and taxiways;

Wesco Paving Co., Volunteer Bldg., Chattanooga, Tenn., CA., $1,733,640, Div. II, runways both at Marine Corps Air Station, CHERRY POINT, N. C. Pub. Wks. Office, Naval Base, Charleston, S. C. Bids Oct. 25. CD 10/31, under LB.

† **Trieste Constr. Co.**, 144 N. Federal Hy., Delray Beach, Fla., CA, $172,417, rehabilitation 31 buildings at Palm Beach International Airport, Inv. 52-72, WEST PALM BEACH, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Nov. 29.

▲† **Warren Bros. Road Co.**, P.O. Box 549, Birmingham, Ala. LB $1,312,500. 150,000 squares articulated concrete mattress at Greenville Casting Field, MISSISSIPPI. U. S. Eng., P.O. Box 60, Vicksburg, Miss. Bids Nov. 29. CD 11/12.

LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

T. L. James, Ruston, La. LB $679,338. grading, 10.003 mi. Thornwill-Lake Hy., Rte. 98, S. P. 190-03-07 and 196-04-04. Bids Nov. 28. CD 11/14.

† **Hooter Brothers Plumbing Co.**, 922 College Dr., Pineville, La. LB $146,565. natural gas sys., at Alexandria Air Force Base, Inv. 52-16, ALEXANDRIA, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids Nov. 27. CD 10/24.

G. E. Moore Co., Greenwood, S. C., CA. $137,805, Div. I;

Bush Building Co., 805 8th Ave. N., Nashville, Tenn., CA. $109,906, Div. II;

Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, Ill., CA. $52,950, Div. III. for WW imprvs., WINCHESTER, TENN. City, Winchester, Tenn. Bids Nov. 21. CD 10/31.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **J. E. Burton Constr. Co.**, P. O. Box 571, South Boston, Va., LB $1,048,000. Consolidated HIGH SCHOOL, HALIFAX, VA. Halifax Co., Halifax, Va., Bids Nov. 21. CD 10/25.

J. R. Houska Co. Inc., Waco and Virginia R. R., Norfolk, Va., LB $260,054. SHOP, NORFOLK, VA. City, City Hall, Norfolk, Va. Bids Nov. 14. CD 10/31.

W. H. Weaver Constr. Co., Greensboro, N. C., CA. $834,600. HOUSING units, LUMBERTON, N. C. Lumberton Housing Auth., Lumberton, N. C. Bids Nov. 15. CD 11/23, under LB.

Coggins Constr. Co., 1900 Hillsboro St., Raleigh, N. C. LB $363,342. 25 unit Macon Court and 25 unit Bayview Homes, HOUSING, MOREHEAD CITY, N. C. Morehead City Housing Auth., Morehead City, N. C. Bids Nov. 28. CD 10/18.

L. S. Bradshaw & Sons, Salisbury, N. C., CA. Approx. $350,000. CHURCH, SALISBURY, N. C. First Evangelical & Reformed Church, c/o contractor.

B & B Constr. Co., P.O. Box 860, Fort Lauderdale, Fla., Owner Builds, $500,000, 50 RESIDENCES, FORT LAUDERDALE, FLA.

Paul A. Stern, 4300 Adams Ave., Miami Beach, Fla., CA, $425,000, 70 RESIDENCES, HIALEAH, FLA. Bradley Housing Corp., 4300 Adams Ave., Miami Beach, Fla.

Markel Industries, 4300 N. W. 2 Ave., Miami, Fla., Owner Builds, $750,000, 124 APARTMENT UNITS, MIAMI, FLA.

A. & O. Builders, 3207½ Metaire Rd., New Orleans, La. LB $526,915. 2 story, brick white HIGH SCHOOL; 1 story, tile colored HIGH SCHOOL, EDGARD, LA. St. John the Baptist Parish School Bd., Edgard, La. Bids Nov. 29. CD 10/31.

Universal Oil Products Co., 310 S. Michigan St., Chicago, Ill. CA $750,000. Platforming REFINING UNIT, LAKE CHARLES, LA. Continental Oil Co., Lake Charles, La. CD 3/28/51.

Lionel F. Favret Co., 937 Gravier St., New Orleans, La. CA $971,000. brick, hollow tile Taylor Park Elementary SCHOOL, NEW ORLEANS, LA. Orleans Parish School Bd., 703 Carondelet St., New Orleans, La. Awarded Nov. 27. CD 12/3, under LB.

Keller Constr. Co., 7900 Palm St., New Orleans, La. LB $711,500. part 1 and 2 story, brick over hollow tile, steel Union Park Elementary SCHOOL, NEW ORLEANS, LA. Orleans Parish School Bd., 703 Caron-

delet St., New Orleans, La. Bids Nov. 29. CD 11/16.

Shelby Constr. Co., Inc., 1108 Canal St., New Orleans, La. CA $934,548. 91 frame, stucco HOUSES, from Paris Ave. to Cartier St., and from Prentiss to Pressburg Sts., NEW ORLEANS, LA. Legion Oak Housing Corp., 8712 Marks St., New Orleans, La. Awarded Nov. 26. CD 6/20, under CA.

MIDDLE WEST

SOON LETS CONTRACT—BUILDINGS

▲ Ill., Chicago—NURSES HOME—Presbyterian Hospital, 2753 W. Congress St., soon lets contract, 8 story bsmnt., 45x125 ft., rein.-con., brick graduate nurses apartment, Hermitage and Flournoy Sts. $7,000,000. Burnham & Hammond, 53 W. Jackson St., Zone 4, archts. CD 12/5/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Allegheny Building Co., 899 Bingham St., Pittsburgh, Pa., LB $406,800, refrigerator warehouse, paint, dope and oil storage shed, automotive shop, air installation office warehouse and administration bldg., guard house and officers mess, Youngstown Municipal Airport, Serial No. ENG 46-022-52-68, YOUNGSTOWN, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., Bids Nov. 27. CD 10/24.

▲ Overland Constr. Co., 205 W. Wacker Dr., Chicago, Ill., CA, $3,277,428, twin trunnion bascule bridges over Chicago River on Congress St. Superhighway, CHICAGO, ILL., City, City Hall, Chicago, Ill. Bids June 26, awarded Nov. 30. CD 7/3, under LB.

▲ Arcole Midwest Corp., 3225 Main St., Evanston, Ill., CA, $2,731,493, railroad relocation, paving, bridge at O'Hare Field, CHICAGO, ILL., City, City Hall, Chicago, Ill. Bids Sept. 25, awarded Nov. 30. CD 10/11, under LB.

▲ Miller-Thompson Co., 23170 Schoenherr Rd., Detroit, Mich. CA $1,850,000. sewage treatment plant, incl. pumping station, detritor and comminutor structure, clarifier, chlorination, etc., BAY CITY, MICH. City, E. A. Cederberg, mayor, Bay City, Mich. Bids Nov. 20. CD 11/8.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ A. Bentley & Sons Co., 201 Belmont, Toledo, O., CA, $5,500,000, design and construct, 1 and 2 story, 400,000 sq. ft. structural steel, masonry FACTORY, FORT WAYNE, IND. Dana Corp., Salisbury Axels Div., Bennett Rd., Toledo, O. CD 10/8, under LB.

Abell-Howe Co., 53 W. Jackson St., Chicago 4, Ill., CA. $750,000. design and construct 80,000 sq. ft. steel framing WAREHOUSE with OFFICE, CHICAGO, ILL. Universal Sheet & Strip Steel Co., 4926 S. California St., Chicago, Ill. Awarded Nov. 22.

▲ A. L. Jackson, 161 E. Erie St., Chicago 11, Ill., CA, $1,833,285 general contract, 2 story, bsmnt., steel frame HIGH SCHOOL addn., Main Twp., near DES PLAINES, ILL. High School District 207, Des Plaines, Ill. Bids Oct. 22, awarded Nov. 28. CD 11/2, under LB.

Nels Quist, Gages Lake Rd., Grays Lake, Ill., LB $500,000. SCHOOL and GYMNASIUM, near GURNEE, ILL. School Dist. 50, Gurnee, Ill. Wm. T. Brookman, 162 N. Clinton St., Chicago 6, Ill. engr. Bids Nov. 27. CD 11/16.

The Austin Co., 510 N. Dearborn St., Chicago 10, Ill. CA., $600,000. design and construct FACTORY addn., NILES, ILL. A. B. Dick Co., 5700 W. Touhy St., Niles, Ill. Awarded Nov. 23.

▲ Milton Ratner, 1040 E. Grand Blvd., Detroit, Mich. CA $2,000,000. 234 brick row HOUSING units, Edward J. Jeffries Proj., DETROIT, MICH. Detroit Housing Comm., 409 Griswold St., Detroit, Mich. Bids Nov. 21. CD 11/8.

Beckering Constr. Co., 2140 Horton St. S. E., Grand Rapids, Mich. CA $683,000. children's HOME and SCHOOL, CUTLERVILLE, MICH. Christian Psychopathic Hospital Assn., Cutlerville, Mich. J. & G. Daverman Co., 301 Keeler Bldg., Grand Rapids, Mich., archt.

▲ Francis J. Corr, Inc., 1120 Sheridan St., Lansing, Mich. LB $2,737,076. reroofing 6 stories OFFICE bldg., incl. removal 2 top stories, remodel interior, etc., LANSING, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lansing, Mich. Bids Nov. 27. CD 10/11.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 20, Kansas

▲† Kansas—B.A. after 2/1—Bureau Reclamation, Dpt. Interior, 19 and C Sts., Wash. 25, D. C., Kirwin Dam foundation, incl. unwatering fdns., lump sum; 1,000,000 cu. yd. excav., common, open cut for fdn. of dam embankment; 700,000 cu. yd. excav., common in borrow areas and transportation to dam embankment; 900,000 cu. yd. earth fill in dam embankment; 100,000 cu. yd. sand and grav. fill in dam embankment; 200,000 cu. yd. dumped fill in dam embankment, North Fork of Solomon River near Kirwin, Phillips Co. Prospective bidders wishing to visit site, advised to contact Mr. William J.

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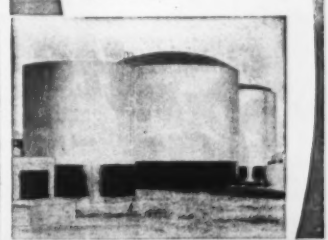

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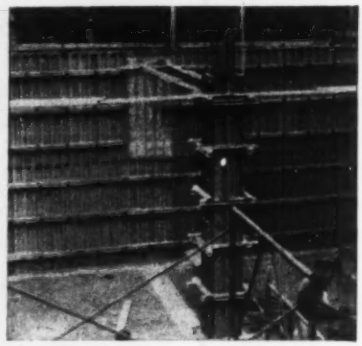

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Quinn, constr. engr., Bureau Reclamation, Kirwin, Kan. L. N. McClellan, ch. engr. CD 11/12.

▲ **Texas**—OIL PIPE LINE—Bids Asked—Texas Pipe Line Co., Texas Co. Bldg., Houston, 196 mi. 16 in. crude oil pipe line between Corsicana and Houston, $4,875,000; more steel tankage construction at crude and products storage farm, $225,000; crude oil pumping station, $375,000; modern crude oil pumping station on line between Corsicana and Houston at Chico, $275,000. CD 11/28.

BIDS ASKED—BUILDINGS

▲ **Ia., Muscatine**—HOSPITAL—B.A. 12/18—Muscatine Co., Muscatine, hospital, $1,868,750. Morgan & Gelatt, 217 F & M Bldg., Burlington, archts. CD 4/26/51.

Minn., St. James—SCHOOL—B.A. 12/20—Bd. Educ., M. E. Loper, clk., school, $575,000. Plans deposit $20, H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt. CD 8/1.

Minn., Grand Rapids—SCHOOL—B.A. 12/21—Bd. Educ, J. A. Anderson, clk., 1 story Forest Lake Grade School, $900,000. Plans deposit $25, A. R. Melander, 603 Alworth Bldg., Duluth, archt. CD 11/27/50.

Ark., Arkadelphia—HOUSING—B.A. 1/23—Arkadelphia Housing Auth., Arkadelphia, 77 housing units, $725,000. Weaver & Stowers, Commercial Natl. Bank, Little Rock, archts. Extended date. CD 11/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MISSOURI**—State Hy. Comm., Jefferson City,
C. H. Atkinson Paving Co., Chillicothe, Mo. LB $89,868. 22 ft. b. conc. .515 mi., DeKalb Co.;
Bridges Paving Co., 1411 Central Industrial Dr. St. Louis, Mo. LB $60,798. 24 ft. b. conc. 1.056 mi. Monroe and Marion Counties; LB $92,607. 24 ft. b. conc. 4.558 mi. Monroe Co.; LB $83,778. 24 ft. b. conc. 4.202 mi. Monroe Co.; LB $101,155. 24 ft. b. conc. 4.981 mi. Monroe Co.; LB $102,165. 24 ft. b. conc. 4.981 mi. Monroe Co.;
Granite Bituminius Paving Co., 3943 Duncan Ave., St. Louis, Mo. LB $108,859. wid'n. b. conc. 3.66 mi. Osage Co.; LB $117,485. wid'n. b. conc. 2.901 mi. Cole Co.; LB $172,405. wid'n. b. conc. 4.258 mi. Cole Co.; LB $112,843. wid'n. b. conc. 2.834 mi. Cole Co.
Atkinson Windle Co., Chillicothe, Mo. LB $191,619, b. conc. 1.609 mi., Jasper Co.;
Perry McGlone Constr. Co., 1805 Grand St., Kansas City, Mo. LB $522,225. 24 ft. c. conc. 4.369 mi. Phelps Co.; LB $172,125, 24 ft. c. conc. 1.631 mi. Phelps Co.;
Midwest Pre-Cote Co., 7618 E. 17 St., Kansas City, Mo. LB $141,232. wid'n., b. conc. 3.577 mi. Cass Co.; LB $180,110. wid'n., b. conc. 4.55 mi. Jackson Co.; LB $92,253, wid'n., h conc. 3.46 mi. Jackson Co.;
Payne & Dolan, Inc., 38 S. Dearborn St., Chicago, Ill. LB $145,051. wid'n., b. conc. 3.299 mi. Cass Co.; LB $121,473. wid'n., b. conc. 3.855 mi. Cass Co.; LB $106,677. wid'n., b. conc. 2.524 mi. Cass Co.;
Bushman Constr. Co., P.O. Box 107, St. Joseph, Mo. LB $347,814. b. conc. 2.057 mi. Platte Co.; LB $439,407, b. conc. 4.448 mi. Platte Co. Bids Nov. 30. CD 11/21.

† **Gable Electric Service**, 6713 Snider Plaza, Dallas, Tex. LB $556,479. 161/69 KV 50,000 KVA power sub-station together with connection transmission line in Greene Co., 3 mi. southwest of Springfield, MISSOURI. Southwestern Power Admin., Petroleum Bldg., Tulsa, Okla. Bids Nov. 20.

W. T. Conroy, 1525 Locust St., Kansas City, Mo. LB $573,860. power piping, MISSOURI CITY, MO. Northwest Electric Power Co-operative, Cameron, Mo. Bids Nov. 28. CD 11/21.

▲† **Barfield Constr. Co.**, Amarillo, Tex. LB $1,436,798, est. $2,103,312. shops, warehouses Smoky Hill Air Force Base, SALINA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Nov. 26. CD 10/30.

Imperial Paving Co., Oklahoma City, Okla., CA. $571,192, asph. type paving Tulake Airport, OKLAHOMA CITY, OKLA., City, City Hall, Oklahoma City, Okla., Toler, Jones & Toler, 1322½ N. E. 23 St., Oklahoma City, Okla., engrs. Bids Oct. 23, awarded Nov. 23.

▲ **MONTANA**—State Hy. Comm., Capitol Bldg., Helena,
Lou Richardson, Miles City, Mont. CA $249,938. grav. bit. surf., drain 9.721 mi. Opheim-Scobey Rd., Daniels Co.;
O'Neil Constr. Co., Havre, Mont. CA $325,506. grav., bit. surf. 4.811 mi. Gildford-east and Fort Benton-Havre Rds., Hill Co.;
Kiely Constr. Co., East of Butte, Mont. and **Union Constr. Co.**, Missoula, Mont. CA $809,120. grade, drain 5.378 mi. Bonita-Nimrod sect., Turah-Bearmouth Rd., Missoula and Granite Counties;
O'Brien Constr., Co., Great Falls, Mont. CA $170,038. grav. 10.182 mi. Chinook-Canadian line road, Blaine Co. Grand total $1,554,602. Bids Nov. 29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Minnesota Power Light Co.**, 30 W. Superior St., Duluth, Minn. Own Forces. Total $12,000,000. STEAM PLANT, AURORA, MINN. Ebasco Services, Inc., 2 Rector St., New York 6, N. Y., engr. CD 10/5/50.

▲ **Procan, Inc.**, (Universal Oil Products Co.), 310 S. Michigan St., Chicago, Ill., CA Approx. $2,000,000. REFINERY unit to increase processing capacity from 8,000 to 30,000 bbls. per day, ST. PAUL PARK, MINN. Northwestern Refining Co., E. R. Erickson, genl. mgr., St. Paul Park, Minn. CD 5/29.

Geer-Maurer Constr. Co., Grand Island, Neb., CA $572,780, constr. Myrtle Memorial Hospital, HARLAN, IA. Shelby Co. Bd. Trustees, Harlan, Ia. Bids Sept. 12. CD 10/17, under LB.

† **F. O. Gilbert, Inc.**, Bossier City, La., CA, $546,677, STORAGE SHEDS at Pine Bluff Arsenal, Inv. 52-7, PINE BLUFF, ARK. Bids Oct. 31. CD 11/8, under LB.

▲ **Winn-Rau Constr. Co.**, 7701 State Line, Kansas City, Mo. CA Approx. $5,600,000, 800 ranch style HOMES on 200 acre tract, Gibbs Rd. and Johnson Co. line at 53 St., southwest of KANSAS CITY, KAN. Highland Crest Development, c/o contractor. Gentry & Voskamp, 4 W. 13 St., Kansas City, Mo., archts.

Andrew-Parker, Inc., Bryan, Tex., CA. $567,508, Veterinary HOSPITAL, COLLEGE STATION, TEX. A & M College of Texas, College Station, Tex. Awarded Nov. 29. CD 11/30, under LB.

▲ **Hudson Engineering Corp.**, 2711 Danville St., Houston, Tex., CA. Approx. $3,500,000, Gasoline PLANT, 30 mi. southwest of MIDLAND, TEX. Magnolia Petroleum Co., Magnolia Bldg., Dallas, Tex. CD 11/8.

Texas Power & Light Co., Interurban Bldg., Dallas, Tex., Owner Builds. Approx. $750,000, electric GENERATING SUB-STATION, at Sandow, 8 mi. southwest of ROCKDALE, TEX. CD 10/17.

▲ **Ebasco Services, Inc.**, 2 Rector St., New York, 6, N. Y., CA, $15,846,000, design and construct bleached sulphate pulp PLANT on Colorado River, COLUMBINE (P. O. New Castle), COLO. Columbine Development Co., Grand Junction, Colo.

Kirchhof Constr. Co., 700 Lawrence St., Denver, Colo. LB $802,000. AUDITORIUM ANNEX (interior work), constr., completion exhibition bldg., DENVER, COLO. City & County of Denver, City & County Bldg., Denver, Colo. Bids Nov. 27. CD 11/19.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Oregon-Washington**—B.A. 1/22—U. S. Eng., 628 Pittock Block, Portland, 5, Ore., excavation for cellular cofferdam, powerhouse forebay and the diversion channel; construct rock fill cofferdam, removal of overburden, construct impervious zones, filter blankets, transition and dumped rock zones and placement of rock revetment, construct steel sheet pile cells, placing gravel fill and revetment in cells and installing seal (sand and cement in bags) construction, installing and operating pumping facilities for underwatering the powerhouse cofferdam for the The Dalles Dam, Inv. No. CIVENG 35-062-52-123. Est. $10,000,000.

BIDS ASKED—BUILDINGS

Calif., Culver City—SCHOOLS—B.A. 12/21—Culver City Unified School Dist., Culver City, Airport School, $534,000; frame, stucco El Rincon School, $398,000. Plans deposit $100. Daniel, Mann, Johnson & Mendenhall, 672 S. Lafayette Park Pl., Los Angeles, archts. D 7/23.

▲ **Calif., Palo Alto**—SCHOOL—B.A. 1/10—Palo Alto Unified School Dist., Box 149, Wilbur Junior High School. $1,000,000. Plans deposit $50. Birge M. Clark & Walter Stromquist, 321 Channing Ave., archts. CD 9/19.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

ARIZONA—State Hy. Dpt. 17 Ave. and Jackson St., Phoenix.

H. J. Hagan, Globe, Ariz., LB, $547,786, improv. 12 mi. incl. foundations over new alignment Globe-Safford Highway, Gila Co.

† **Gunderson Bros.**, 4700 N.W. Front St., Portland, Ore., LB $632,142, stop logs, lifting beams, fish screens and storage latches for draft tubes at McNary Dam, Inv. 52-38, OREGON. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids Nov. 29. C 10/29.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,

Erickson, Phillips & Weisberg, 3341 Telegraph Ave., Oakland, Calif., CA, $584,512, repairing, wid'n 14 concrete bridges, wid'n roadway, etc. between Deer Creek overflow and Mill Race Creek Tehama Co. Bids Oct. 31. CD 11/7, under LB.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,

Gene Richards, Inc., P. O. Box 1389, Fresno, Calif., LB, $411,957, grading surf., etc. 1.8 mi. Blackstone Ave. between Olive Ave. and 0.2 mi. north of Shields Ave. in Fresno, Fresno Co. Bids Nov. 28. CD 11/8.

▲† **F. W. Case Co.**, 7700 Balboa Blvd., Van Nuys, Calif., LB $1,762,482, schedule A, warehouse enclosures, firewalls, etc. at Sharpe General Depot, Eng 52-4, Spec. 1577, LATHROP, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Nov. 28. CD 11/8.

BUILDINGS

LOW BIDS AND CONTRACTS

McGinty Constr. Co., Luhrs Bldg., Phoenix, Ariz., LB, $930,491, physical education bldg., Arizona State College, TEMPE, ARIZ. State, Arizona State College, Tempe, Ariz. Bids Aug. 22. CD 8/6.

▲ **Rubenstein Corp.**, 5760 N. Central St., Phoenix, Ariz., CA, $2,500,000, construct, manage and finance 300 RESIDENCES at Davis-Monthan Air Force Base, TUCSON, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Awarded Nov. 16. CD 9/18, under LB.

▲ **The H. K. Ferguson Co.**, 1783 E. 11 St., Cleveland, O., CA. Approx. $2,500,000, agricultural insecticide PLANT, HENDERSON, NEV. Hercules Powder Co., Delaware Trust Bldg., Wilmington, Del. CD 12/3.

Bell & Valdez, 11002 Woodward Ave., Seattle, Wash., Day Labor, $534,000, 47 HOUSES, BELLEVUE, WASH. CD 11/16.

▲ **P. Wks. Div., 13th Naval Dist.**, 1611 W. Wheeler St., Seattle, Wash., negotiating with Paramount Housing Corp., 4015 W. Jefferson Blvd., Los Angeles (second bidder) $2,730,000 to construct, manage, finance 300 APARTMENTS, at Naval Air Base, WHIDBEY ISLAND, WASH. FHA certificate issued to Leland McArthur & Assoc., 900 S. 5 St., Las Vegas, Nev. has expired. CD 5/24/51, under CA.

▲ **Bein Constr. Co.**, 139 S. Beverly Dr., Beverly Hills, **R. J. Daun Constr. Co.**, 6803 West Blvd., Inglewood, and **M. J. Brock & Sons, Inc.**, 2849 Rowena Ave., Los Angeles, LB, $4,195,000, low-rent HOUSING, Proj. CAL 4-21, West Los Angeles, LOS ANGELES, CALIF. Housing Auth. of Los Angeles, 1401 E. First St., Los Angeles, Calif. Bids Nov. 27. CD 11/5.

▲ **Milton Kauffman Constr. Corp.**, 2918 W. Compton St., Gardena, Calif., CA $1,347,500, low-rent HOUSING, Proj. Cal 4-17 Rancho San Pedro, LOS ANGELES, CALIF. Housing Auth. of City of Los Angeles, Calif., 1401 E. First St., Los Angeles, Calif. Bids Nov. 6. CD 11/13, under LB.

O. L. Carpenter, 1102 Morena Blvd., San Diego, Calif., LB, $521,869, Mar Vista SCHOOL addns., NATIONAL CITY, CALIF. Sweetwater Union High School Dist., 2800 Highland Ave., National City, Calif. Bids Nov. 27. CD 2/20.

▲ **Maino Constr. Co.**, 2238 S. Broad St., San Luis Obispo, Calif. CA, $1,043,940, general constr. Paso Robles SCHOOL for Boys PASO ROBLES, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Nov. 6, awarded Nov. 29. CD 11/13, under LB.

Westwood Builders, 509 S. Beverly Dr., Beverly Hills, Calif., LB, $533,800, est. $480,839, constr. Jefferson SCHOOL, SAN GABRIEL, CALIF. San Gabriel School Dist., 301 S. San Gabriel Blvd., San Gabriel, Calif. Bids Nov. 27. CD 11/5.

▲ **Alison Honer Co.**, 31 N. Main St., Santa Ana, Calif., LB, $1,265,979, constr. Ventura County HOSPITAL addn., VENTURA, CALIF. Ventura County Bd. Supervs., Court House, Ventura, Calif. Bids Nov. 27. CD 10/23.

Nomellini Constr. Co., P. O. Box 1177, Stockton, Calif., LB, $308,856, SCHOOL, WESTLEY, CALIF. Grayson Elementary School Dist., Westley, Calif. Bids Nov. 27. CD 10/19.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Alaska**—ADMINISTRATION and UTILITY BLDGS.—B.A. 2/5—Civil Aeronautics Admin., Anchorage, Alaska, 2 story prefabricated steel administration bldg. and utility bldg. at Anchorage Airport; 1 story administration bldg. and utility bldg. at Fairbanks Airport, Est. $3,250,000. (Correction—status). CD 8/1, under CA and CD 7/16, under LB respectively.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **S. S. Mullen, Inc.**, 621 9th Ave. N., Seattle, Wash. CA $720,611, est. $652,598, remove receiver facility, 595-507-52-7, Ladd Air Force Base, ALASKA. U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids Nov. 14. CD 11/20, under LB.

U. S. POSSESSIONS

BIDS ASKED—BUILDINGS

▲ **Philippine Islands, Quezon City**—HOSPITAL—B.A. 1/14—Secretary National Defense, Republic of the Philippines, Camp Murphy, Quezon City, constructing complete bldgs., utilities of hospital at Hilaga Ave., Diliman. Total est. $31,000,000. Plans deposit $250 general constr. etc. $10 for elev. and refrigeration plans and spec. Plans and specifications on display at the Philippine Embassy, Wash. D. C.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

January 17, Nova Scotia

▲ **Nova Scotia**—B.A. 1/17—Halifax-Dartmouth Bridge Comn., H. J. Egan, secy., 140 Roy Bldg., Halifax, constr. sub-structure of Halifax-Dortmouth Bridge, Contr. 2 Plans deposit $100. C. A. W. Fowler & Co., Capitol Bldg., Halifax, engrs. and archts., adv. ENR 12/13. CD 11/14.

SOON LETS CONTRACT—BUILDINGS

Ont., Ottawa — EXCHANGE — Barott, Marshall, Montgomery & Merrett, archts., Canada Cement Bldg., Montreal, Que., soon lets contract, 3 story, 85x190 ft., rein.-con. frame and slabs, stone facing on 2 walls, concrete block on remaining two, telephone exchange addn., O'Connor and Albert Sts., for Bell Telephone Co. of Canada, 1050 Beaver Hall Hill, Montreal, Que., Approx. $600,000. CD 3/23/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Campbell-Bennett Ltd., 1718 W. 5 Ave., Vancouver, B. C., LB, $904,819, driving and partial concrete lining 2 trunk sewer tunnels and excavation for and erection 2 rein.-con. pumping stations, installing rising main and other related works, SAANICH, B. C. Saanich, Municipality, Hall, Saanich, Royal Oak, P.O., B. C., engr.

Hughes Constr. Co. Ltd., 365 Rogers Rd., Toronto, Ont., CA, Approx. $900,000, standard O. R. Mess, at R.C.A.F. Station, CAMP BORDEN, ONT. Defence Constr. Ltd., 44 Queen's Quay W., Toronto, 2B, Ont. R. P. Opie, c/o owner, engr.

▲ **Pitts., Johnson, Drake & Perini**, 221 Victoria St., Toronto, Ont., CA, $3,200,000, Sect. 6 and last of rapid transit subway, Imperial St. to Eglinton Ave. terminal, open cut and cut-and-cover construction, terminal bldgs., TORONTO, ONT. Toronto Transportation Comn., 35 Yonge St., Toronto, Ont. Bids Nov. 27, awarded Nov. 29. CD 10/17.

Dinsmore Constr. Ltd., P. O. Box 246, Windsor, Ont., CA, $518,000, 50x150 ft., reinforced poured concrete foundation, brickwalled pumping station, Wyandotte St., WINDSOR, ONT. Windsor Utilities Comn., Water Div. 607 Canada Bldg., Windsor, Ont. Bids Nov. 8 awarded Nov. 28. CD 10/9.

BUILDINGS

LOW BIDS AND CONTRACTS

Bennett & White of Edmonton, Ltd., 11239 83 St., Edmonton, Alta., CA, $979,000 general contract rein.-con. maternity wing addn. to Royal Alexandra HOSPITAL, EDMONTON, ALTA. City, Civic Block Edmonton, Alta. Bids Oct. 29, awarded Nov. 27. CD 11/16, under LB.

Caldwell Constr. Co., Ltd., 123 York St., Fredericton, N. B. CA, $572,225, High SCHOOL, WOODSTOCK, N. B. Town of Woodstock Bd. School Trustees, W. J. Dibblee, chn., Woodstock, N. B. Bids Nov. 7, awarded 12/3. CD 10/30.

M. A. Condon & Son, 63 Aberdeen St., Kentville, N. S., CA $500,000 HIGH SCHOOL, CAMBRIDGE, N. S. Dpt. Hys. & P. Wks., Halifax, N. S. Bids Nov. 23, awarded Dec. 3. CD 10/3.

M. A. Condon & Son, Kentville, N. S., CA, $500,000, Rural High SCHOOL, KENTVILLE, N. S. Town, R. W. Ruffle, mayor, Kentville, N. S. Awarded Nov. 28. CD 11/8.

Zeller's Contg. Co. Ltd., Bldg. 2012, Ajax, Ont., CA, $750,000, 100 HOUSING units, DEEP RIVER, ONT. Central Mortgage & Housing Corp., 411 Queen's Quay W., Toronto, Ont. Bids Nov. 20, awarded Dec. 3. CD 11/5.

▲ **Rex Heslop Homes Ltd.**, 7 Brown's Line, Etobicoke, Ont. Owner Builds. $1,065,000. 118 DWELLINGS, MALTON, ONT.

M. Sullivan & Son, Ltd., 234 Elgin St., Arnprior, Ont., CA, $400,000, 50 single family HOUSES, RENFREW, ONT. Central Mortgage & Housing Corp., 441 Queen's Quay W., Toronto, Ont. Bids Nov. 20, awarded Dec. 3. CD 11/5.

▲ **A. W. Robertson Ltd.**, 57 Bloor St. W., Toronto, Ont., CA, $1,749,000, FACTORY, 1 story machine shop, three bays, 505x360 ft., 2 story office bldg., boiler house steel frame, brick, Eglinton Ave. E., TORONTO, ONT. English Electric Co. of Canada Ltd., 14 Strachan Ave., Toronto, Ont. Allward & Gouinlock, 57 Bloor St. W., Toronto, Ont., archts. Awarded Dec. 3.

Cie de Construction Ste. Madeleine Ltd., 299 Blvd. Ste. Madeleine, Cape De La Madeleine, Que., Approx. $500,000, 125 COTTAGES, St. Philippe St., CAP DE LA MADELEINE, QUE. Emery Mastricotte, 484 Notre Dame St., Cap De La Madeleine, Que.

Lavat & Perlini, 1074 Beaver Hall Hill, Montreal, Que., Own Forces, $500,000, concrete, brick APARTMENTS and STORES, Ogilvie Ave. between Durocher and Querbes Aves., MONTREAL, QUE. C. Grenier, 170 Geneva Crescent, Montreal, Que., archt.

Smith Bros. & Wilson, 104 Dominion Bank Bldg., Regina, Sask., CA, $554,000, 205x266 ft., brick, Public SCHOOL, REGINA, SASK. Regina School Bd., Regina, Sask. H. K. Black, 3 Black Block, Regina, Sask., archt. CD 1/11.

Smith Bros & Wilson, 524 Second Ave. N., Saskatoon, Sask., CA, $900,000, HOUSING, incl. 150 units at air force base, SASKATOON, SASK. Central Mortgage & Housing Corp., 400 Kensington Bldg., Winnipeg, Man. Bids Oct. 31, awarded Nov. 28.

LATIN AMERICA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Ing. Luis L. Leon, c/o Sria. de C.y O.P., Mexico City, Mexico, CA, $500,000. Mexican half international bridge between Reynosa, Mexico and Hidalgo, Tex. over the Rio Grande River, REYNOSA, MEXICO. Mexican Govt., c/o Sria. de C. y O.P., Mexico City, Mexico. Awarded Dec. 1. CD 6/23/48, under Texas and Mexico.

FOREIGN

BIDS ASKED—HEAVY CONSTRUCTION

Iraq—B.A. 2/29—Development Bd. of the Govt. of Iraq, Baghdad, Iraq, construct barrage, lock and fish ladder, incl. installing sluices, lock gates, lifting bridge and operating machinery, at Ramadi on the River Euphrates. Plans deposit I.D. 15,000.

(Proposal Advertisements see pp. 104 & 105)

OFFICIAL PROPOSALS

Bids: December 27, 1951

Soil Explorations in Oneida County

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., eastern standard time, on December 27, 1951 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES OF THE NEW YORK STATE THRUWAY, MOHAWK SECTION, SUBDIVISION NOS. 5 and 6, VERONA TO WESTMORELAND, ONEIDA COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-23.

Maps, plans and specifications may be examined and obtained at the Bureau of Contracts and Accounts on the 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., and also in the office of Lacy Ketchum, District Engineer, 109 North Genesee Street, Utica 1, New York.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $12,690,000.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $635.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Works

Bids: January 17, 1951

Sub-Structure Halifax-Dartmouth Bridge

CONTRACT NO. 2

Sealed tenders addressed to the undersigned and marked as instructed, will be received at the office of the undersigned until 12 o'clock noon, Atlantic Standard Time, January 17th, 1952, for the construction of the sub-structure of the Halifax-Dartmouth Bridge in the Province of Nova Scotia, in accordance with the plans and specifications available at the office of Dr. P. L. Pratley, 909 Drummond Building, Montreal, Quebec, and at the office of C. A. Fowler and Company, 422 Capitol Building, Halifax, Nova Scotia, on or after November 29th, 1951. These plans may be borrowed from the Engineer by recognized General Contractors on deposit of certified cheque for $100.00 guaranteeing the return of the plans. This deposit will be returned to all bidders on return of the plans to the office from which they were borrowed, and will be forfeited if the plans are lost, destroyed or damaged. A certified cheque for ten percent of the amount of the tender made payable to the order of the Halifax-Dartmouth Bridge Commission, or alternatives as described in the "Instructions to Bidders" must accompany each bid, and tenders must be on the forms provided. The above deposit will be returned in the case of non-acceptance and be forfeited in case the successful tenderer does not proceed to the satisfactory completion of the contract.

A signed copy of the "Instructions to Bidders" must accompany each bid.

Tenders will only be considered from established General Contractors.

Tenderers must state names and quotations of sub-contractors. The lowest, or any tender, not necessarily accepted.

Halifax-Dartmouth Bridge Commission,
H. J. Egan, Secretary,
Halifax, Nova Scotia.
140 Roy Building

READ THE OFFICIAL PROPOSAL COLUMNS OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: January 18, 1952

Public Grain Elevator

NOTE—DATE OF OPENING OF BIDS CHANGED FROM 12/18/51 to 1/18/52

Sealed bids will be received by the Board of Commissioners of the Port of New Orleans at their office, Room 204, No. 2 Canal Street, until 2:00 P.M., January 18, 1952, and then publicly opened for construction of Public Grain Elevator either under two separate contracts for Items A and B or under one contract for Item C.

ITEM A—Foundations, dumper pits, etc.

ITEM B—Structures and appurtenances complete with mechanical, electrical and all other installations.

ITEM C—Complete project.

A deposit of five per cent of the sum bid, by certified check only, certified by an accredited officer of an accredited bank, is required with each bid. A deposit for a bid on Item C will be applicable to separate bids on either or both of the other items, or the bidder may furnish the deposit called for with each separate bid submitted.

A surety bond, by an acceptable surety company, in the amount of 100% of the sum bid is required with notarial contract.

Specifications, plans and bid forms are on file in the Board's office mentioned above. Complete sets will be furnished to prospective bidders on deposit of $50.00 for each set of Item A and $150.00 for each set of Item B or Item C, which deposit(s) will be refunded to depositors who submit bids with plans. In case of depositor not submitting a bid, $25.00 of bidder's deposit for Item A or $100 of bidder's deposit for Item B or Item C, will be refunded upon return of full sets in good condition within thirty days after opening bids.

The right is reserved to accept or reject any or all bids and to waive informalities, and to award contract as the Board may determine to be for its best interests.

E. H. Lockenberg,
General Manager

Requisition No. SD-7582
December 10, 17, 1951

Bids: January 1, 1952

Construction of Intercepting Sewer

NOTICE OF LETTING
CITY OF WILMINGTON, DELAWARE

Sealed proposals for furnishing materials and labor to construct Intercepting Sewer C, Contract No. 5 of the City of Wilmington's Sewage Treatment Program, will be received from qualified bidders by the Board of Directors of the Street and Sewer Department, Room 251, City Hall, until 2:00 P.M., Eastern Standard Time, January 29, 1952, at which time and place they will be publicly opened and read aloud.

Each proposal shall be submitted in a sealed envelope, which shall be marked to clearly indicate its contents. If the proposal is forwarded by mail, it shall be enclosed in an additional envelope addressed to the Board of Directors of the Street and Sewer Department, City of Wilmington, Delaware. If submitted other than by mail, it shall be delivered to Room 260, City Hall.

The work embraces constructing approximately 9500 linear feet of 60" to 78" diameter pipe sewers; constructing approximately 1600 linear feet of 18" diameter pipe sewers; constructing two siphone chambers, one on each bank of the Christina River; improvements to the existing masonry and earth channel of Shipley Run; and other miscellaneous and appurtenant work. The Board of Directors have received a CMP allotment.

Each bid shall be accompanied by a certified check in the amount of two (2) percent of the proposal, made payable to the Board of Directors, Street and Sewer Department, City of Wilmington, Delaware.

Drawings and specifications may be obtained from the office of the Board of Directors of the Street and Sewer Department of the City of Wilmington, Room 260, City Hall, or from the office of Whitman, Requardt and Associates, 1304 St. Paul Street, Baltimore 2, Maryland, upon deposit of Twenty-five Dollars ($25.00) for each set of drawings and specifications, which deposit will be refunded upon return of the plans and specifications in good condition.

The Board of Directors of the Street and Sewer Department reserves the right to reject any or all bids and to accept the bid, which in its opinion best serves the interests of the City.

By order of
Board of Directors of the Street and Sewer Department
Vaughan Clavey—President

Attested
James J. Livingstone, Secretary

OFFICIAL PROPOSALS

Bids: December 27, 1951

Soil Explorations in Herkimer & Montgomery Counties

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., eastern standard time, on December 27, 1951 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

SOIL EXPLORATIONS AT VARIOUS SITES OF THE NEW YORK STATE THRUWAY, MOHAWK SECTION, SUBDIVISION No. 10-B, ONE MILE EAST OF E. SCHUYLER TO FORT HERKIMER, HERKIMER COUNTY; AND SUBDIVISION No. 12-B, INDIAN CASTLE TO OPPOSITE CAROGA CREEK HERKIMER AND MONTGOMERY COUNTIES, WHICH CONSTITUTES CONTRACT No. SPEC. SM-24.

Maps, plans and specifications may be examined and obtained at the Bureau of Contracts and Accounts on the 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., and also in the office of Lacy Ketchum, District Engineer, 109 North Genesee Street, Utica 1, New York.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $20,498,00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1025.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Works

U. S. Government

General Services Administration, Public Buildings Service, Washington, D. C., Nov. 30, 1951—On or about Dec. 20, 1951, bidding material for Extension and Remodeling of the U. S. Public Health Service Hospital (formerly U. S. Marine Hospital) at Seattle Washington, will be available for distribution to general contractors by this office. Applications from general contractors interested in bidding on this work, for not to exceed 2 sets of drawings and specifications, should be filed promptly with this office and the bidding material will be forwarded as soon as available. Bids will be opened on the date named in the Prebid Documents, which will be about 6 weeks after the bidding material is available for distribution. Description: New 3-story T-shape wing of 8500 sq. ft. ground area and remodeling of existing Hospital and Apartment Building. Construction: Reinforced concrete frame; brick facing with structural tile back-up; stone trim; composition roofing; roof insulation; hollow metal door frames, wood doors; plaster; tile, terrazzo linoleum and asphalt tile floors; acoustical units; metal toilet enclosures; radiation protection; Hospital and Laboratory Equipment. Extension of existing vacuum heating system. Elevator and dumbwaiters will be under a separate contract. Available for construction—approximately $850,000. Bidding material will be available at Room No. 1304 General Services Building, 19th and F Streets, N. W., Washington 25, D. C. Phone Executive 4900, Extension 2397. W. E. Reynolds, Commissioner of Public Buildings Service, General Services Administration.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3602) will be received by the Bureau of Reclamation, Denver, Colorado, until January 3, 1952, and then publicly opened for furnishing one 100-ton, single-trolley, motor-operated traveling crane for Alcova Power Plant, Kendrick Project, Wyoming. Delivery is desired within 450 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but SEARCHLIGHT SECTION assumes no responsibility for errors or omissions.

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OFFICIAL PROPOSALS

Bids: December 19, 1951

New York Highway Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, December 19, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1 G. L. NICKERSON, 353 Broadway, Albany 1, N. Y.				
Schenectady	FASS 51-28	Rosa Road-Hillside Ave.-River Rd. (Co. Rds. 2N, 3N, & 4N) Proj. S-351(1)	3.98	Asp. Conc. Ty. 1A, Optional	$20,000 Plans $15	$160,000
		DISTRICT No. 2 L. KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Madison	FASS 51-26	Stockbridge Falls-Merrillville (Co. Road) Proj. S-360(1)	5.18	Graded Gravel (Bit. D.St.)	$13,000 Plans $15	$237,000
Oneida	FASS 51-27	Oriskany Falls-Lairdsville Pt. 2 (Co. Road) Proj. S229(2)	4.80	Bit. Mac. Opt. Rd. Mix	$19,000 Plans $15	$167,000
		DISTRICT No. 2 L. KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
		DISTRICT No. 3 WILLIAM ROBINSON, Dist. Engr., Weigh Lock Bldg., Syracuse 1, N. Y.				
		DISTRICT No. 7 ROY F. HALL, Dist. Engr., 444 Van Duzee St., Watertown, N. Y.				
13 Counties 5 Cities	FARC 51-18 FARC 51-19 FARC 51-23	Installation of Automatic Recording Traffic Counters in Dist. 2, 3, & 7 Proj. SWHP 1(8)		Installation of 28 Aut. Recording Traffic Counters	$2,800 Plans $15	$49,000
		DISTRICT No. 4 A. R. MULLIGAN, Dist. Engr., Barge Canal Terminal, Rochester 1, N. Y.				
Monroe	FAC 51-7	Rochester City: Ridge Road West (Mt. Read Blvd. to Lake Ave.) Proj. U-402(6)	1.67	Asp.Conc.Ty.2A=1.60 Mi. Misc. Work=0.07 Mi.	$45,000 Plans $25	$835,000
Monroe	FASS 51-29	Edgemere Drive (Co. Rd.) Proj. S-289(1)	0.72	Fd. Cse. Gravel	$16,000 Plans $10	$294,000
		DISTRICT No. 5 C. R. WATERS, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Chautauqua	FARC 51-82	Penn State Line-Dunkirk Pts. 1, 2, & 3 S. H. 9030,8334,8344 Dunkirk-Silver Creek S.H. 8304 Proj. F-458(10)	33.75	Asp. Conc, Ty. 1A, Opt.	$123,000 Plans $10	$2,057,000
Cattaraugus	FASSH 51-9	Ellicottville-Springville Pt. 1 Proj. S-365(1)	9.34	Asp. Conc. Ty. 1A Opt.=9.17 Mi. Misc. Work=0.17 Mi.	$70,000 Plans $50	$1,222,000
Erie	FAOT 51-8 FAST 51-7	N. Y. State Thwy.-Ontario Section (Harlem Ave.-Williams St.); Henry St.; Parker St.; Dingens St. Proj. UI-1071(8)	1.82	2 Cse. Cem. Conc. Pavt. 26ft 37" Wide=0.90 Mi. Bit. Mac. Ty. 1=0.81 Mi. Misc. Work=0.11 Mi. Hy. Sep. Alpha I-Beam 213.7" Sp. Alpha Royalty=$260.	$45,000 Plans $15	$780,000
		DISTRICT No. 8 J. S. BIXBY, Dist. Engr., Pleasant Valley Road, Poughkeepsie, N. Y.				
Dutchess	FARC 51-76	Rhinebeck-Hyde Park S.H. 432 Hyde Park-Staatsburg S.H. 5135 Proj. F-322(10)	2.48	9" Cem. Conc. Pavt. 44' Var. Wide	$48,000 Plans $10	$813,000
Westchester	TSP 51-2	Grade Separation of Underhill Rd. (Co. Rd. 131) & Tacome State Parkway	0.23	Asp. Conc. Ty. 1-A Opt. 85'-2¾" Sp. Conc. Rig. Frame	$16,000 Plans $15	$290,000
		DISTRICT No. 9 F. W. DONOVAN, Dist. Engr., 71 Frederick St., Binghamton 21F, N. Y.				
Chenango	FARC 51-78	Norwich-So. New Berlin Pt. 2, SH 1394 Proj. F-620(8)	0.11	Misc. Work 35 Conc. Slab	$3,000 Plans $10	$52,000
		DISTRICT No. 10 J. J. Darcy, Dist. Engr. Montauk Highway at Little East Neck Rd., Babylon, Long Island, N. Y.				
Suffolk & Nassau	FARC 51-51	S.H. Nos. 9018, 8474, E8438, 8470, E8440, 9444, 9445, 8460, 1841, 8291, 1833, 1274	19.10	Landscaping=17.00 Mi. Landscaping & Misc. Work=2.10 Mi.	$4,000 Plans $10	$72,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: December 20, 1951

Creosoted Railroad Cross and Switch Ties

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK MARINE TERMINAL
PROPOSAL NO. 621

Sealed proposals for furnishing 1986 Creosoted Cross and Switch Ties for delivery to Port Newark Marine Terminal, South Dock & Terminal Streets, Newark, N. J. will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 A.M. Thursday, Dec. 20, 1951, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
HOWARD S. CULLMAN, CHAIRMAN
NEW YORK, NEW YORK

SEARCHLIGHT SECTION

Classified Advertising

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Packaging	Plant Layout	Water Treatment
Air Conditioning	Conveyors	

Limited number of openings for Estimators experienced in Mechanical and Chemical installations as well as building construction.

Also have a number of openings in our Cincinnati and New York City offices for similar type personnel.

Excellent working conditions with paid vacations, sick leave plan and participating Group Insurance Program.

Please submit complete resume stating experience, education, salary required and date available to:

The H. K. FERGUSON COMPANY
Engineers and Builders

FERGUSON BUILDING CLEVELAND 14, OHIO

DESIGNERS

We need men with experience as:

Structural Designers
Concrete Designers
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Men should have experience in Blast Furnaces, Steel Mill, Oil Refinery or other Heavy Structural Design.

Positions available in our offices at Cleveland, Ohio and Union, New Jersey.

We pay among highest rates plus annual profit-sharing bonus.

Our continuous expansion and growth offers many fine future opportunities.

WRITE.

ARTHUR G. McKEE & Co.
2300 Chester Ave., Cleveland 1, Ohio

DISTRICT MANAGERS WANTED

Midwestern equipment manufacturer needs district managers for distributor and dealer contact and other field sales work in several territories. Full time traveling. Products are truck equipment, roadbuilding and excavating machinery. Applications are invited from qualified men with field sales experience in these lines.

SW-2671, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Illinois

HYDRO-CONSTRUCTION ENGINEERS

Hydro-Construction Engineers with 10 to 15 years experience on hydro-electric power plant construction, wanted by large engineering and construction organization. Also, position available for Assistant Hydro-Construction Engineer. College graduates preferred. Location Pacific Northwest. Submit resume of experience; salary desired, and date available.

P-2555, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

Permanent Positions Open to ENGINEERS

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to top U. S. and Canadian industry. Usual pension and other benefits. Excellent opportunities; fast-growing engineering organization.

Write complete qualifications to:
P-2447, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DESIGNERS and DRAFTSMEN

Permanent positions available with long established utility for men exp. in reinforced concrete, electrical, heating and piping. 37½ hrs, 5 days. All employee benefits. Location—Phila.

American Water Works Service Co.
121 South Broad St. Philadelphia 7, Pa.

SAN DIEGO COUNTY Needs An ASSISTANT DIRECTOR OF PUBLIC WORKS

Salary—At least $616 to start, maybe as high as $749. Work week 40 hours.

Applicants should have five years of applicable experience and be eligible to become registered as Professional Engineer.

Write

Civil Service & Personnel Department
402 Civic Center, San Diego, California

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ASSISTANT GENERAL Superintendent—Well established Northwestern Ohio General Contractor employing approximately 450 people on industrial, commercial and public work, has a permanent position for a young graduate Engineer or Building Contractor with at least ten years experience and a desire to get ahead in a growing organization. Please send full details of education, experience, salary wanted, age and other pertinent information, care of P-2469, Engineering News-Record.

CHIEF ENGINEER Wanted: Main office of Large Building Contracting firm in Northern New Jersey Area, has opening for top flight man. Must be completely familiar with estimating, bidding and cost analysis on both heavy construction and building contracts. Possibilities Unlimited. Must be willing to accept responsibilities. Only applicants with proven experience will be considered. Send complete resume. P-2657, Engineering News-Record.

DESIGNERS FOR highway and bridge work in Rhode Island. Send experience to P. O. Box 814, Providence, Rhode Island.

ENGINEERING COMPUTER Draftsman and General Office Engineer — Good experience record required. Thorough experience with electric computing machine and use of coordinates. Work involved is subdivision of large tracts of land into small lots. Familiarity with curvilinear road layouts and curve intersections required; also experience in general civil engineering work and practice. Civil engineering education required. Work is located at Morrisville, Pennsylvania. Phone Manhasset 7-0777, C. A. Monroe, 1900 Northern Boulevard, Manhasset, N. Y.

ENGINEERS ON Design of water and sewage treatment projects in consulting engineers office. Northwestern Ohio. P-2660, Engineering News-Record.

EXPEDITOR-ASSISTANT Project Manager for contractor's office New York City. Must be familiar with office procedure on public and private contracts — drawings, expediting subcontractors. Field experience desirable — not essential — reply P-2652, Engineering News-Record.

FIELD SUPERINTENDENT wanted to assist General Superintendent. Must be qualified in project construction, frame, block and brick, large project, located in the Norfolk, Va. area; if proven satisfactory can become organization man. Write stating experience etc., in first letter, top pay to the right man. Reply to Lansdale Gardens, Inc., 109 Duke Street, Norfolk, Va.

MALE HELP Wanted: Construction Superintendent for multi-million dollar Hospital Project. Give names of similar projects supervised, references, salary expected. P-2629; Engineering News-Record.

EMPLOYMENT SERVICES

SALARIED PERSONNEL $5,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

WANTED — EXECUTIVES-Engineers-Designers-Draftsmen also Recent Graduates all lines. Architects, Chemists and Steel Men. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

WANTED . . .

CONSTRUCTION SUPERINTENDENT

Assignment-Northeast Canada
Salary—from $10,000

Contract Requirements:—Minimum of 20 years in construction field. Previous foreign construction experience preferred. Engineering background helpful. Must be a good organizer able to layout work for Canadian labor.

Write and furnish full information regarding education, training, chronological details of experience. Age, salary expected, references. Small photograph and availability.

No applications considered without foregoing information. All replies will be considered strictly confidential.

P-2648, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS WANTED

SUPERINTENDENT - PROJECT Manager, graduate Civil Engineer 48, contract negotiations, accurate estimator, successful record of customer and labor relations. Top field organization and supervision, layouts, 25 years industrial, dams, hydros, power houses, bridge, highway, docks, foundations, cofferdams, piledriving, hotels, chainstore and housing. Foreign service 16 years, Africa, South America, etc. Speaks many languages. Location not important. New York telephone, Wisconsin 7-0200, ext. 803 or write Box PW-2694, Engineering News-Record.

ASPHALT SUPERINTENDENT-Top flight; 45; married; 16 years diversified experience all phases of asphalt work. South or Southwest preferred. PW-2667, Engineering News-Record.

CHIEF ENGINEER desires permanent relocation as modern organization executive where stimulus is needed in mechanical and structural field. Creator of new ideas, methods, and supervisory systems. PW-2698, Engineering News-Record.

CHIEF STRUCTURAL Engineer — Graduate, Age 50. Twenty-nine years experience in design and construction of industrial buildings, bridges, marine and heavy engineering structures; administration of contracts; client relations; field and office supervision. Now employed. Desire permanent connection in New York Metropolitan area. PW-2592, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, age 42. 20 years construction experience Bldgs., all types schools, City bldg., water plants, sewer disposal and factories. Have good record as a good organizer of men, understand costs of labor and material. Not afraid of long hours and work. Can give good references. Wish to locate in Southwest U.S.A. PW-2467, Engineering News-Record.

ENGINEER—BUILDING Construction experienced managing large projects. Negotiates contracts, controls, costs. Meet owners and architects diplomatically. PW-2526, Engineering News-Record.

ENGR., 27, presently employed, solid field and office experience, interested in position with small contractor as assistant. PW-2683, Engineering News-Record.

ESTIMATOR-TWENTY Years experience, pricing, buying, handle subcontracts, job management. Familiar C.P. F.F. Contracts. Available January. PW-2535, Engineering News-Record.

GENERAL SUPERINTENDENT, grad. engineer, twenty years diversified experience, bridges, power plants, chemical plants, large scale apartment development, all types institutional construction. Know men and equipment, cost conscious and good organizer. PW-2656, Engineering News-Record.

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ARCHITECTURAL ENGINEERING

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53 W. Jackson Blvd. Chicago 4, Ill.
Room 1662 Harrison 7-4036

FOR SALE
SMALL CONTRACTING BUSINESS

Due to imminent recall to armed forces of partner, small contracting business in North Texas, specializing in grading, flexible bases, asphalt surfacing, bridges, is now for sale. This business well located for highway and defense construction and has consistently made a profit. Equipment is all current model, principally Caterpillar. Northwest shovel. Possibility that key personnel would continue with new owner.

BO-2687, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS WANTED

REGISTERED PROFESSIONAL Engineer—57 years old — 2 degrees civil engineering — 30 years design and construction experience: bridges, highways, buildings, and river and rail terminals. Will have to retire in 5 years—can retire now. Only attractive offer considered—worked for experience — want money now! South America, Europe or U. S. PW-2642, Engineering News-Record.

STRUCTURAL-ENGINEER, age 36, graduate, licensed Washington State. Eleven years experience—all types of reinforced contract, steel and timber structures. PW-2478, Engineering News-Record.

SUCCESSFUL TOP Monumental building and heavy construction man presently in charge of all work for internationally known long established construction company desires immediate change. PW-2585, Engineering News-Record.

BUSINESS OPPORTUNITY

Established Engineering Business

profitable and long established Civil Engineering and Surveying practice in suburb of New York City. Offering includes owner's house and complete record of 35 years operation. Owner, wishing to retire will make terms for payment over period of time. BO-2537, Engineering News-Record.

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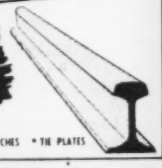

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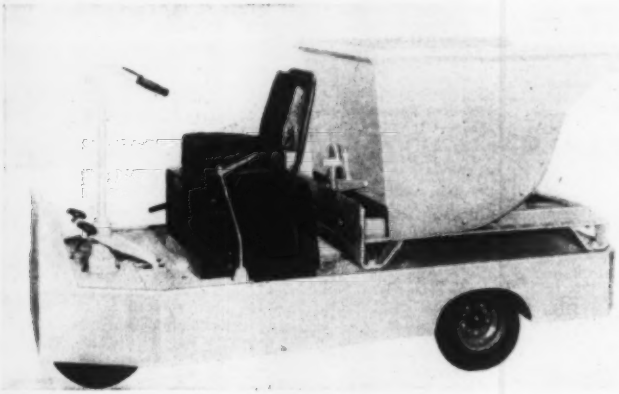
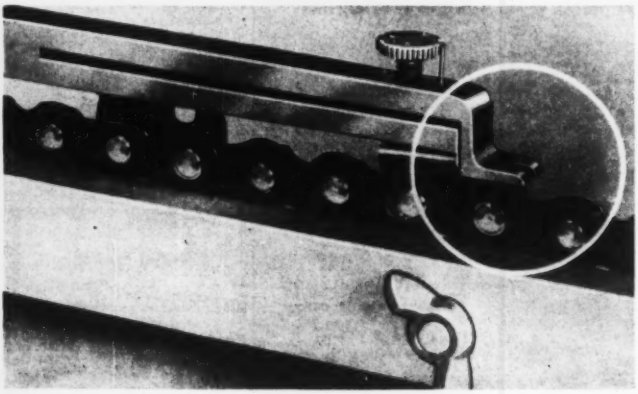
Consult them when necessary.



Speed truck carries one-half-yard hopper

Optional equipment on the Model M 2500 Kalamazoo speed truck is a ½-yd. self-dumping hopper shown in the photograph above. The hopper can be discharged without the necessity of the operator leaving his seat. Cinders, sand, gravel, cement, concrete, water, and most liquid or dry materials can be economically handled with this unit according to the manufacturer. Its net weight is 1150 lb, he says, which makes it usable in some of the heavier cages and hoists. Wheel base is 59¾ in., and turning radius only 64 in., making it an extremely versatile machine for close spaces. It has an automotive type, dry plate clutch, and three-speed transmission is used. The final power drive acts on both rear wheels. KALAMAZOO MANUFACTURERING COMPANY, 1827 REED STREET, KALAMAZOO 24F, MICHIGAN.



Power chain saw depth gauge joiner

A new tool called the Oregon Depth Gauge Joiner is designed for determining and adjusting cutting clearances on power saw chains having depth chains or riders. The manufacturer says it is readily set for any desired depth by turning a readable dial screw up or down and then placing it on the chain. All the chain riders may be easily filed to the exact uniform depth indicated by the gauge. Riding prongs on the tool are hard chromed to resist filing wear. OREGON SAW CHAIN CORPORATION, 8816 S.E. 17TH AVENUE, PORTLAND, OREGON.

New motor degreaser and truck washing compound

A new degreasing compound is the answer to a longstanding need for a versatile compound that can be used for everything from degreasing heavily coated parts to washing motors and painted trucks, according to its maker. Fleet maintenance establishments and garages stand to benefit substantially by its use. It must be diluted with from 3 to 8 parts of kerosene or light fuel oil for most applications. Its high grease solvent properties, instant rinsability, make it fast acting and easy to use. According to the manufacturer, you just spray or swab on in desired concentration—allow it to stand for fifteen minutes—then hose it off. It is self-drying. He further claims that it is harmless to print and renders grease and grime easily soluble when hosed off. A hydraulic, hand-pumped spray gun or a specially designed air gun is given free with each initial order of a 55-gal. drum. These guns facilitate the use of the Greasmaster. When diluted 8 to 1 with kerosene, the price of the resulting cleaning mixture can be as low as 21 cents a gallon. STEWART-HALL CHEMICAL CORPORATION, DEPARTMENT TSN, MOUNT VERNON, N. Y.

Lighting and acoustical treatment combined

The only thing visible in this new type ceiling is a pearly white corrugated plastic ceiling resting on 6 x 1 in. acoustical beams or fins. These fins, made of finely perforated white enameled steel enclosing a non-absorbent acoustical pad, run the entire length and width of a room on 36-in. centers.

The fluorescent light source is above this plastic ceiling, invisible to the eye. The result is complete diffused lighting and, according to the manufacturer, shows better than 70 foot-candles, a most remarkable amount for the small amount of lamps used in the setup. The ceiling is entirely washable and covers unsightly ducts, pipes, and sprinkler installations. LUMINOUS CEILINGS INC., 2500 W. NORTH AVENUE, CHICAGO 47, ILLINOIS.

Concrete curing compound can be sprayed on

A new, fast drying, spray-on concrete curing compound has been developed which will reportedly effectively seal 200 sq ft of horizontal surface per gal.

(Continued on page 121)

NEW

THE WORLD'S BIGGEST LOADING SHOVEL

MARION 191-M
10 cubic yards

- Loads trucks in the 50-ton class in 3 or 4 passes to meet big haulage problems.
- Big enough to load gondola rail cars quickly.
- Greater travel speed and maneuverability than most of smaller machines.
- All-electric or diesel electric power; Ward-Leonard control on both.
- A 10 cu. yd. heavy-duty shovel with small-machine cycle time.
- Largest two-belt crawler shovel built.

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MARION, OHIO, U. S. A.

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

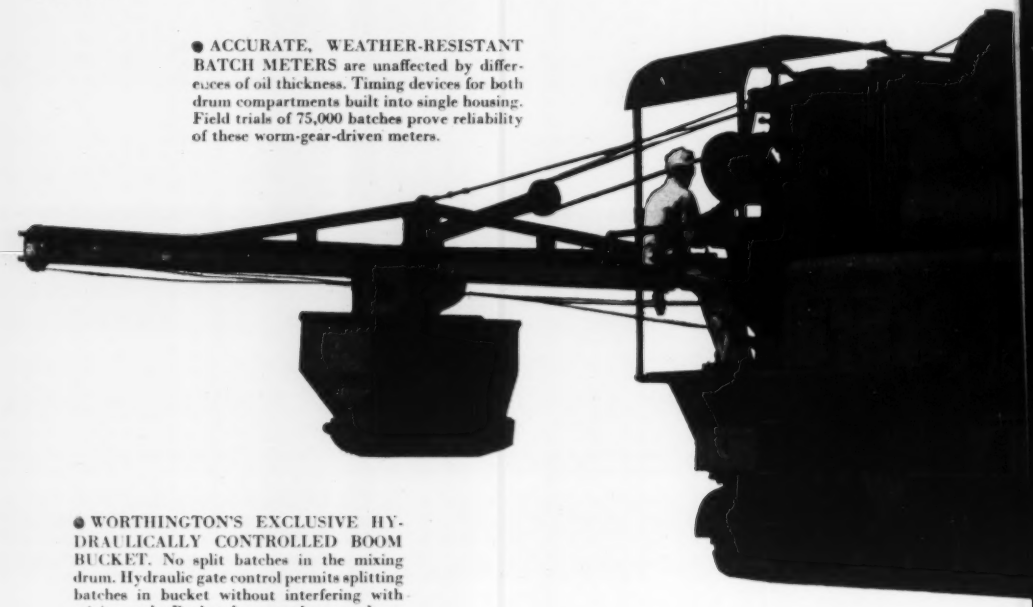
NEW! WORTHINGTON—built to help you

It had to be built! Today's tight schedules and rigid specifications demand a new, better paver that can do a high-speed job without sacrifice in quality.

And it had to be built by Worthington-Ransome! It took 40 years of Worthington-Ransome paver experience and the unmatched facilities of their integrated engineering staff to make possible this new paver.

● INSTANT, POSITIVE RESPONSE WITH SMOOTH, EFFORTLESS CONTROL. Transfer and discharge chutes, water valves, boom swing, bucket travel and controllable bucket discharge, all easily operated with hydraulic control levers conveniently placed for rapid action.

● ACCURATE, WEATHER-RESISTANT BATCH METERS are unaffected by differences of oil thickness. Timing devices for both drum compartments built into single housing. Field trials of 75,000 batches prove reliability of these worm-gear-driven meters.



● WORTHINGTON'S EXCLUSIVE HYDRAULICALLY CONTROLLED BOOM BUCKET. No split batches in the mixing drum. Hydraulic gate control permits splitting batches in bucket without interfering with mixing cycle. Bucket doors can be opened any distance required to regulate flow of concrete. Concrete can be spread across runways up to 25 ft wide while paver operates outside forms.

● RUGGED, RESPONSIVE BOOM-SWING MECHANISM. Mechanism is hydraulically controlled, piston operated, bull-wheel type. Hydraulic cushioning prevents bent booms. No worm gears to break.

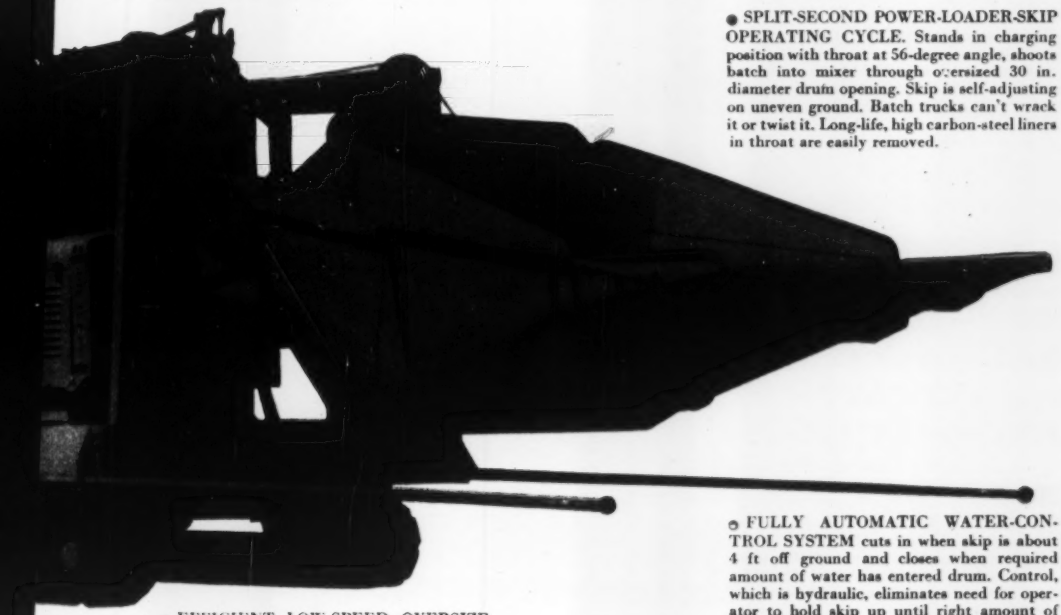
● FAST, POSITIVE BOOM RAISING AND LOWERING. Worm-drive mechanism fully enclosed and running in oil; operates only when booming up and booming down.

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

RANSOME PAVER
set paving records

Check these features of this newest paver and see for yourself.

- Power loader skip takes only 6½ seconds from ground to discharge position of 56° on low slope
- Transfer from first compartment to second compartment approximately 6½ seconds, depending upon concrete consistency
- Discharge into boom bucket approximately 6½ seconds, depending on concrete consistency
- Boom bucket travel speed—256 ft per minute
- Hydraulically-controlled boom swing of 171°
- Can swing and spread simultaneously



● SPLIT-SECOND POWER-LOADER-SKIP OPERATING CYCLE. Stands in charging position with throat at 56-degree angle, shoots batch into mixer through oversized 30 in. diameter drum opening. Skip is self-adjusting on uneven ground. Batch trucks can't wrack it or twist it. Long-life, high carbon-steel liners in throat are easily removed.

● FULLY AUTOMATIC WATER-CONTROL SYSTEM cuts in when skip is about 4 ft off ground and closes when required amount of water has entered drum. Control, which is hydraulic, eliminates need for operator to hold skip up until right amount of water is discharged by using an adjustable automatic water cut-off delaying action.

● EFFICIENT, LOW-SPEED, OVERSIZE DIESEL. Cummins HBID-600. Engine speed only 1300 RPM. Experience has shown that this kind of power unit performs better, lasts longer, and costs less to run. Main power take-off speed-reduction unit has cut tooth, helical gears; sealed, self-aligning anti-friction bearings. Sealed, triple-width roller-chain coupling between speed-reduction unit and countershaft.

Get the complete story of this new Worthington-Ransome WP Paver through your Worthington Blue Brute Distributor or by writing direct to Worthington Pump and Machinery Corporation, Construction Equipment Division, Dunellen, N. J.

WORTHINGTON

DISTRIBUTORS IN ALL PRINCIPAL CITIES

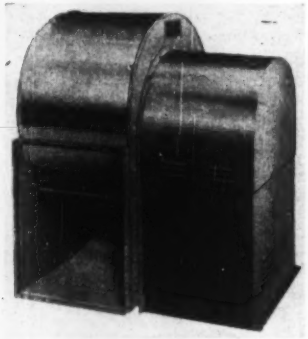
R.I.3

New Bank Building in the Bronx — This attractive new structure at 2516-28 Grand Concourse, just off Fordham Road in New York City, contains the executive offices of the Dollar Savings Bank of the City of New York. The 11-story-plus-tower building stands next door to the bank's Fordham office. It is a red brick structure with its three lower floors faced with brown granite. Approximately 800 tons of Bethlehem Structural Shapes were used in erecting its steel framework. *Architect:* Halsey, McCormack & Helmer, Inc., New York. *Engineer:* Matthew Hiller, Jr., New York. *General Contractor:* Irons & Reynolds, Inc., New York. *Steel Fabricator and Erector:* Grand Iron Works, Inc., New York.

BETHLEHEM STEEL

New products . . .

Augmenting the line of Permite membrane concrete curing compounds manufactured by Aluminum Industries, Inc, of Cincinnati, it is said to be considerably less expensive than many other concrete compounds now on the market. The company claims that this Permite W-95 meets or exceeds the most rigid specifications of the Army Engineers and other Federal Agencies as well as most state codes. Its counterparts are Permite V-167, a resin-base curing compound recommended for all horizontal concrete surfaces and for vertical surfaces below ground; and Permite V-169 resin-base for all vertical concrete surfaces where non-discoloration is an important factor. ALUMINUM INDUSTRIES, INC., 2438 BEEKMAN STREET, CINCINNATI 25, OHIO.



Centrifugal fan has waterproof hood

A new centrifugal fan arrangement, with waterproof hood over the motor drive section, can be installed outdoors without further protective enclosure according to its manufacturer. Available with wheel diameters as large as 60", in backwardly inclined and forwardly curved, single width, single inlet models in Class I construction. Designated as Arrangement No. 10, the fan has all the high-efficiency, low-noise and low-horsepower characteristics of the rest of the Trane fan line according to the company. THE TRANE COMPANY, LACROSSE, WISCONSIN.

Floodlight projector

The Tilley floodlight projector burns ordinary kerosene and gives a light of 5,000 mean reflected candle power. It is a self-contained unit with no cables or any other obstructions and user is entirely independent of batteries, generators or the like. Said to be un-

(Continued on next page)

BUILD with less steel... save time and manpower, too

with LIGHTWEIGHT, insulating PERMALITE aggregates

Industrial buildings, schools, hospitals, defense housing, military buildings – all can be built with *less vital* steel. Lightweight Permalite in place of sand in concrete and plaster will reduce the dead-load of a building as much as 80%. Less steel is needed to support this lighter weight concrete and plaster.

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CONCRETE: *Roofs and Floors*—over lightweight decking. *Exterior Walls* – thin, light; easily formed and erected.

Can be monolithically poured or precast into blocks, slabs and panels – can be sawed or nailed!

PLASTER: *Fireproofing*—speedily applied over structural steel. *Interior Walls* – replaces sand plaster – at less than half the weight.

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Engineers—Fabricators
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Structural Steel
BRIDGES and BUILDINGS

AISC

General Office and Shops
PHOENIXVILLE, PA.

Subsidiary—Barium Steel Corporation

New products . . .

affected by weather, it is recommended for all emergencies or accidents. Its capacity is 6 pints of fuel, sufficient for about 40 burning hours. Overall dimensions are 14½ x 11½ x 26 in. WM. W. LEE AND SON, 20 EAST JACKSON BOULEVARD, CHICAGO 4, ILLINOIS.

New plastic piping

Since the early stages of World War II when metals were extremely critical in Europe, unplasticized polyvinyl chloride extrusions have been widely used. Chemical plants used this type of piping as a replacement for special alloys to carry both acids and alkalis. This is the principal reason for the appearance of a new corrosion-resistant plastic piping called "Tuffstuff," and the manufacturer expects to find wide use for it in the chemical, petroleum, mining and plumbing fields.

In the manufacture of rayon for instance, it was found that this plastic was not subject to deterioration like conventional metallic carriers. It is extruded in U. S. Standard pipe and tubing sizes, is rigid, but not brittle. Welding, cementing and bending may be easily accomplished by the usual techniques. CLOPAY CORPORATION, CINCINNATI, OHIO.

Leaks sealed speedily

A new stabilizing ingredient has been added to Flextite that speeds up action in sealing off leaks, water seepage in concrete walls, etc., according to the manufacturer. The new Flextite provides quicker action and more thorough bonding. A liquid chemical to be mixed with cement or cement and sand, Flextite produces a mortar which is said to be easily handled, fast-setting, and capable of sealing off severe leaks even against hydrostatic pressure.

The material is recommended further for plaster-coated walls above or below ground or water level as well as for pointing up spalled areas, for converting wet factory basements, etc. FLEXROCK COMPANY, FILBERT AND CUTHBERT, W. OF 36TH STREET, PHILADELPHIA 4, PA.

New German model high precision transit

A new precision transit has recently been announced for use in coast surveying, triangulation, highway and tunnel construction. Designated as model No. 30, it incorporates standard features of Breithaupt surveying instruments such as totally enclosed and dust-proof construction, compactness and reduced weight. The instrument weighs 11½ lb. and is said to have accuracy on vertical and horizontal circles of 1 second. Telescope aperture is 40 mm and magnification 30 X. The sensitivity of the instrument's three levels is said to be 20 seconds per 2 mm. COLUMBIA TECHNICAL CORPORATION, 5 EAST 57th STREET, NEW YORK 22, N. Y.

(Continued on page 125)

HERE'S AN OIL BURNING SALAMANDER that's really SMOKELESS!

. . . even at a high burning rate

When you buy a salamander you want heat . . . not smoke! Ordinary bowl-type salamanders may be smokeless at low and medium burning rates, and may continue to be smokeless at these burning rates if cleaned often enough. The HY-LO Salamander is not only the cleanest burning heater at *both* low and high burning rates, but *continues* this same smokeless burning with far less attention. This definitely superior performance of the HY-LO Salamander is accomplished by the use of the patented return gas stack principle. This return gas stack returns consumed gases to the bowl, resulting in better combustion and elimination of carbon. Salamanders are purchased for use during low and extremely low temperatures and maximum heat out-put is, therefore, essential.

Insist on clean-burning HY-LOs . . . they cost no more than ordinary salamanders.

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Patented Return Gas Stack
Extinguishing Damper
Handy Carrying Clamp-Handles

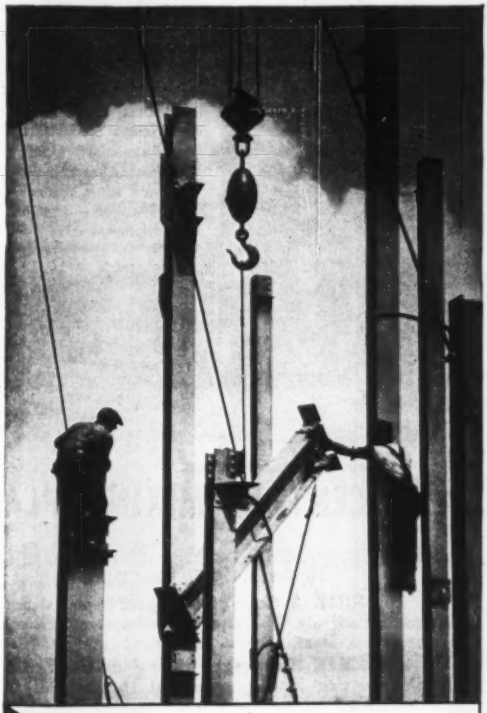
HY-LO OIL BURNING SALAMANDER

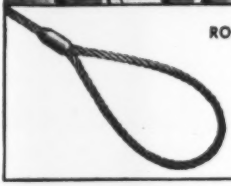
SCHEU PRODUCTS COMPANY
274 STOWELL STREET
UPLAND, CALIFORNIA

PATENT NO. 2284157

Height—62¾"
Diameter of bowl—19"

WIRE ROPE





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On every type of equipment you'll do best with Roebling

"BLUE CENTER" STEEL wire rope is an exclusive Roebling development. It has to pass the most stringent tests for strength, fatigue and abrasion resistance . . . gives rope the extra life that spells economies. Besides, Roebling Preforming assures you top performance on the job. "Blue Center" Preformed is easy to handle . . . has better spooling qualities . . . reduces vibration and whipping.

Roebling makes a complete line of wire rope . . . offers the right grade and construction for every installation. Have your Roebling Field Man help choose the *right* rope for your equipment. Get his advice on the correct use and maintenance of wire rope. It is based on performance records on thousands of installations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

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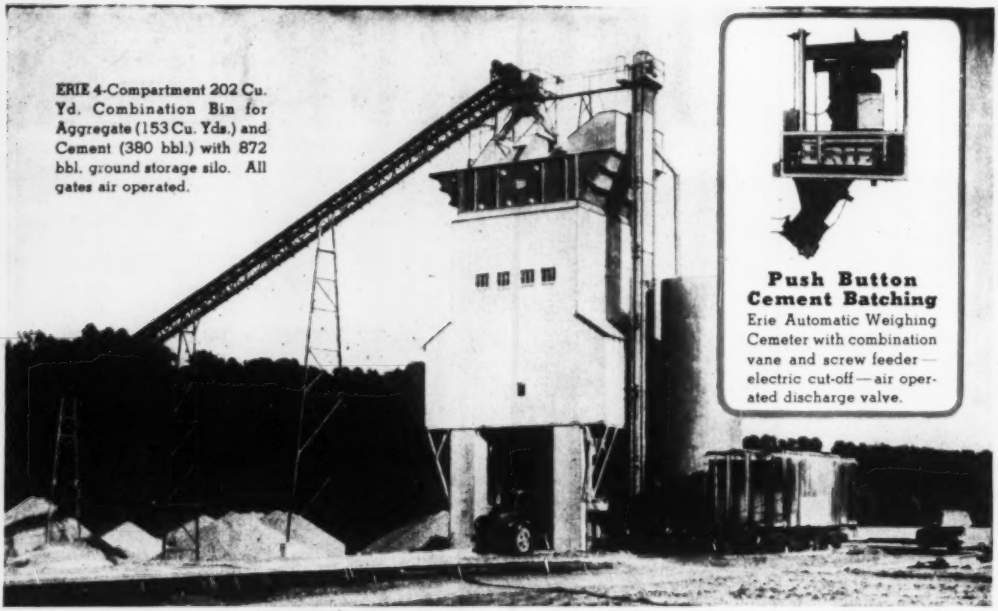

ERIE 4-Compartment 202 Cu. Yd. Combination Bin for Aggregate (153 Cu. Yds.) and Cement (380 bbl.) with 872 bbl. ground storage silo. All gates air operated.

Push Button Cement Batching
Erie Automatic Weighing Cemeter with combination vane and screw feeder—electric cut-off—air operated discharge valve.

AN ERIE *High Speed* CENTRAL MIXING PLANT

Crane transfers sand and stone from river barge to stock piles. Tunnel belt conveyor under stock piles is loaded by push button air operated gates. A control panel, located on the ground near the junction of the tunnel and inclined belt conveyors, flashes the high and low bin signal lights to guide operator in directing proper material from stock piles. The material level in the 4-Compartments is automatically maintained within a set high-low range.

BATCHING OF CEMENT AND AGGREGATE IS FAST AND ACCURATE

ERIE 2 Cu. Yd. AggreMeter with hand controlled air operated charging and discharge gates—3 Beam Scale with over and under dial.

ERIE Cemeter with 2 Beam Scale and electric cut-off weighs cement automatically—hand controlled air operated discharge valve. Cement and aggregate is discharged into 2 -2 Cu. Yd. Mixers with a yield of 100 to 125 Cu. Yds. of concrete per hour under rigid inspection.

DIG MORE *and* FASTER

ERIE Clamshells are carefully designed to eliminate useless deadweight. They are available in 4 types—Rehandler—General Purpose—Barge Type and Hard Digger. Each in a complete range of capacities to provide the correct bucket for crane—job and material. Write for Cat. 2L-2.

We Doubled the bin capacity in the ERIE Portable Concrete Plant. It now holds 40 cu. yds. This reduces frequency of truck deliveries of aggregates and keeps material always in good supply. Investigate the economy of making 30 to 40 cu. yds. per hour of specification concrete on the job. An auxiliary bucket hoist is also available to speed concrete to forms or truck. Write for catalog. Describe your concrete job.

ERIE

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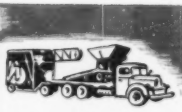


MANUFACTURERS' PUBLICATIONS

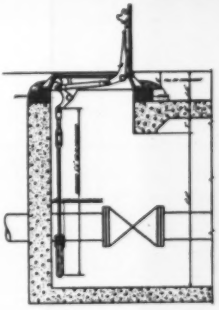
Insulux glass block—The important role of glass block, especially as a replacement for worn-out window sash, during this period of material shortages, is outlined in a 16-page booklet. Replacement of worn-out windows with glass block panels is shown in a step-by-step series of photographs followed by several pages offering dimension tables and technical data on the correct method of installing glass block in various types of walls encountered in industrial plants.

The booklet reminds business men seeking non-critical materials for plant improvement that this glass block offers savings of tons of scarce metal. "Insulux Glass Block," it says, "ends costly repair bills incurred through deteriorating window sash, because it is impervious to steam, corrosive vapors, or high humidity conditions." AMERICAN STRUCTURAL PRODUCTS COMPANY, TOLEDO 1, OHIO.

Safety release valves—This is a new bulletin illustrating charts showing the capacity required from safety valves to give 100 percent protection in case of pressure reducing valve failure. Also shown is a gas volume-weight chart, for determining volumes per pound of gases with various specific gravities at different pressures and temperatures. Many of the company's models of valves are illustrated together with a number of tables giving valve capacities in steam, air, and .6 sp.gr. gas at various pressures. All engineering data is approved by the ASME Standard and National Board. Relief valves shown and described are for the protection of boilers, compressors, heat exchangers, kettles, pressure piping, pressure vessels, process equipment, and regulators. Ask for Bulletin No. 851. MARINE AND INDUSTRIAL PRODUCTS CO., 3731-35 FILBERT ST., PHILADELPHIA 4, PA.

Conveyor belts and systems—This is a 40-page illustrated catalog showing standard and special types of wire-belting weaves with specifications and detailed descriptions. Power formulae and construction details are covered fully, as well as suggestions for prolonging belt life and increasing efficiency. It is a comprehensive and useful handbook on spiral woven wire conveyor belts, and complete conveyor systems by THE KORB-PETTIT WIRE FABRICS AND IRON WORKS, INC., 1505-15 NORTH MASCHER STREET, PHILADELPHIA 22, PA.

(Continued on page 127)



● The Wachs Safety Counterbalanced Vault Cover can be opened with ease and safety by one man. To open, merely insert the combination Key-Handle, give it a half turn and open the cover with one hand. The counterbalance weights that make lifting the cover a one handed job also hold it in an upright, protective position while a man is below. Designed and manufactured to withstand the heaviest traffic, many of these units have given trouble free service for over 40 years under the most rugged conditions. Several leading utility companies have had them in use for this period of time.

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Manufacturers Publications . . .

Speed reducers and gear motors—This is a 96-page, pocket-size catalog which gives complete engineering data on how to select the proper speed reducer to fit requirements, including horsepower ratings, ratios, and installation graphs. The front section of the book includes a refresher on speed reducer selection, horsepower and torque, with several actual application examples. Cut-away photos show the inner workings on all makes and models. ABART GEAR & MACHINE Co., 4834-36 WEST 16TH ST., CHICAGO 50, ILL.

Mine hoists—A new 24-page bulletin illustrates and describes various sizes and types of Nordberg Mine Hoists which are built in cylindrical, conical or cylindro-conical, single or double drum designs of the conventional or tandem type to meet any specific hoisting requirements. Labeled Bulletin No. 190, it shows with installation photographs the application Nordberg hoists have in coal and ore mining operations, both in the U.S. and throughout the world. Each description of an installation contains pertinent engineering data on the hoists' operations. NORDBERG MFG. CO., MILWAUKEE 7, WISCONSIN.

Welders' vest pocket guide—A pocket size booklet "Hobart Welding Electrodes and Welders' Vest Pocket Guide" contains useful arc welding information. The booklet gives information on metals and electrodes, types of electrodes, four essentials of proper welding procedures, color marking for identification of electrodes, types of joints, typical positions, standard steel shapes, characteristics of the fillet weld, causes of common welding troubles, average electrode consumption, handy reference information, and instructions for using all Hobart Electrodes. THE HOBART BROS. CO., BOX EW-161S, TROY, OHIO.

Battery AD-X2—Is a white powder packaged three envelopes per treatment-package. Each envelope contains sufficient "Battery AD-X2" to treat one cell of a group 1 or 2 automotive-type lead-acid battery. The 12-page catalog shows the company's simple economical way to combat battery sulfation. It introduces the personnel of the company, and explains their service system for batteries. Testimonials are included from master mechanics and equipment supervisors connected with various construction and engineering companies. PIONEERS, INC., 2411 GROVE ST., OAKLAND 12, CALIFORNIA.

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On the virtues of engineering

Many an engineer has had occasion through his professional life to wonder about his profession and its vaunted privileges and rewards.

One of the most prominent of engineers (albeit a mining engineer) has also done some wondering and has come up with some answers.

That engineer is Herbert C. Hoover, the only living ex-President of the United States. Mr. Hoover used a recent talk at the announcement of the start of a drive for $22,000,000 to build a new engineering center at Columbia University as his sounding board.

Said Hoover:

Men never lose the love for the profession to which they have given years of their lives.

The recollection of its joys is the more vivid if one has back-slid onto the slippery path of public life.

Within a little more than my lifetime, the training of engineers has risen from apprenticeship to a trade or secondary technical schools, to the dignity of a university-trained profession.

• **Fascination**—The engineer has the fascination of watching a figment of his imagination emerge with the aid of science to a plan on paper, move to realization in cement, metal or energy, bring new jobs and homes to men. That is the engineer's high privilege among professions.

The profession, however, has woes. The engineer's work is out in the open where all men can see it. If he makes a mistake, he cannot bury it in a grave; obscure it by trees and ivy; blame it on the judge or jury; claim his constituents demanded it; blame it on the devil; nor can he, like the public official, change the name of it and hope that the voters will forget.

Worse still, if his works do not work he is damned. And the world mostly forgets the name of the engineer who did it. If it works, the credit goes to some fellow who used other people's money to pay for it. But the engineer himself looks back at the unending stream of goodness that flows from his successes with a satisfaction that few other professions can know.

• **Big factor**—Most people are not aware of it, but the engineer is also a political, economic and social force.

I asserted one time that he is the fellow who really dissolves monopolies, redistributes the wealth, and dismantles political platforms.

Over our history, men of one generation after another have been elected to office by being "agin" the monopoly of canals, or railroads, or anthracite coal, or kerosene oil or slums or the utility grabbing of water power.

These were no doubt great evils. But who really remedied these evils?

It was the engineer.

• **A great "aginner"**—He upset the canal monopoly with the railways; the railways with the automobile, the airplane and the pipeline.

He upset the anthracite monopoly with coke, the kerosene oil with electric light, and he assured that most of the streams would remain as scenery by making cheaper power with steam.

Who makes possible the escape from the slums? It is the engineer with his parkways, his bridges, his satellite towns. Who provided leisure for the housewife? It was the engineer with his household gadgets.

I hardly need add that it was the engineer who distributed wealth by creation of mass production and his many other devices to reduce costs of production.

• **Engineer training needed**—The training of engineers instills character in those who would join the ranks. High ethical standards are the essential of all professions, engineering included. Technology without intellectual honesty does not work, construction without consciousness soon crumbles.

These are the reasons you have seen no engineers before the Kefauver Committee. Nor in the headlines which these days pour fourth from grand juries and district attorney offices. The engineers merit only to sit on juries.

But here we meet a great national problem. We do not have enough engineering teachers and we do not have enough students to carry on the nation's work. And we do not have enough research facilities to assure the needed flow of new inventions and improvements.

Herbert Hoover

Our engineering graduates have dropped from 50,000 in 1950 to 38,000 in 1951. We need 60,000 a year to supply national needs.

• **Need facilities**—What is being proposed here is not only an aid to education, but also to research. The job of the engineer is to take the discoveries of pure science and convert them into use for the good of mankind. To this end, he needs laboratories.

At one time we got our inventions from the genius in the garret. Poverty, however, does not clarify thought, nor does it provide a laboratory. Bread and butter diet has been discarded as the mother of invention.

Today, these gifts come from long years of organized search and experiment. Therefrom, like the cell by cell growth of plants, fact builds upon fact until there comes forth the blossom of discovery, the illuminating hypotheses or the great generalization.

And there are spiritual consequences of research. From them comes the unfolding of beauty, the ever-widening boundaries of thought. Here is the invocation of veracity of thought in a world sodden with intellectual dishonesty. From its discovery comes the lifting of men's minds beyond the depressing incidents of the day. Here is confirmation of a Supreme Guidance in the universe far above man himself.

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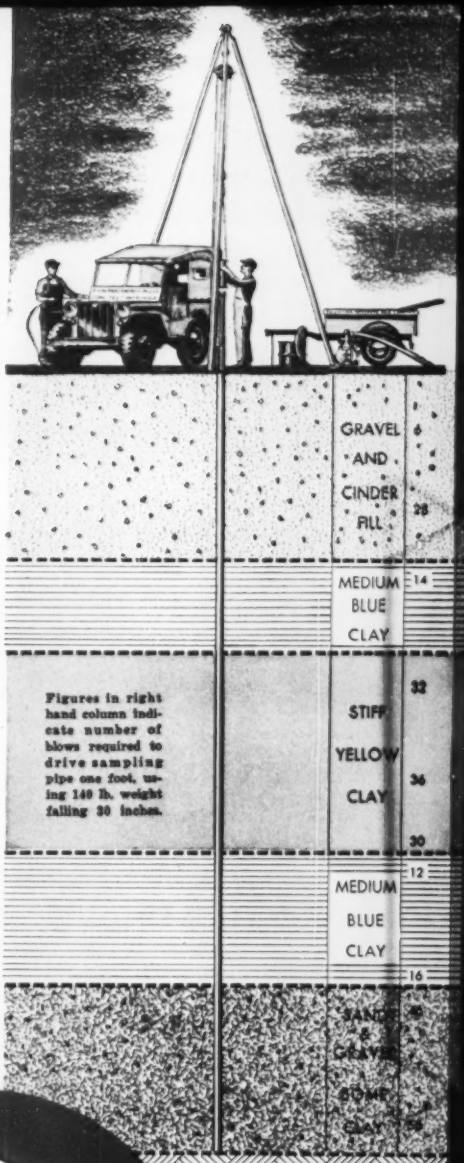

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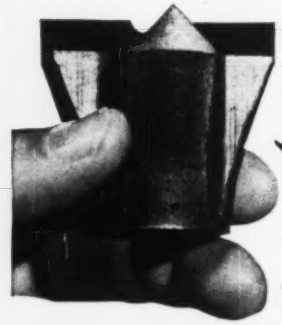

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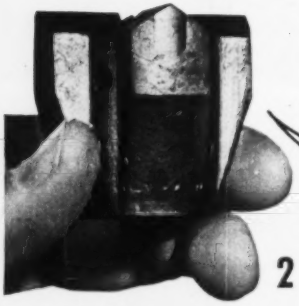

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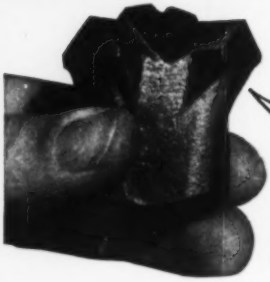

3

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